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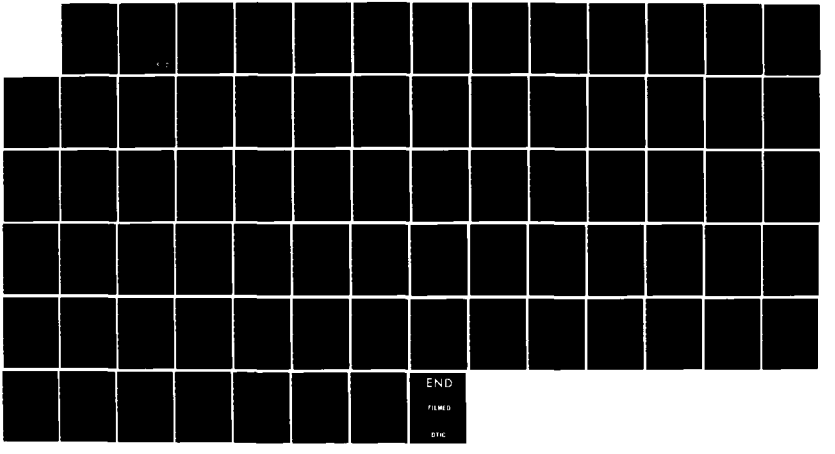

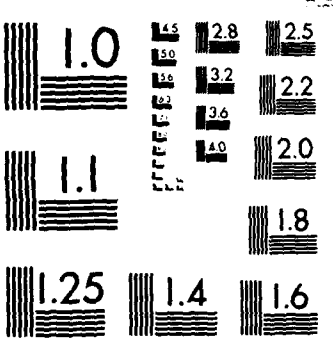

RECRUITMENT EARLY WARNING SYSTEM AND ACCESSION CONTINGENCY PLANNING PROCESS

PHASE II, PART 1
FINAL REPORT

November 1984

ECONOMIC RESEARCH LABORATORY, INC.
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Reston, Virginia 22091

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One of the major accomplishments achieved in Phase II, Part 1 of the REWS/ACPP study is the development of an interim automated information system for generating monthly Recruiting Market Assessment Reports. The system (described in Chapter IV) forecasts unemployment and high-quality enlistments for each Service, and produces tabular and graphic presentations of these forecasts, as well as supporting data useful for analyzing trends in recruiting. Regression models for enlistments and a univariate ARIMA model for unemployment are estimated in a mainframe environment, then captured in ASCII files and transferred to a micro computer environment where tables and graphs are produced. The October Assessment Report (presented in Chapter II) illustrates the outputs generated by the system. The study team has identified software which may enable the transfer of the entire system to an IBM PC XT in the next phase of the study.

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Other accomplishments include model development and further data collection (Chapter I). The enlistment forecasting models used in the REWS have been expanded: new policy variables were added, an additional model was estimated for the Marine Corps, and all models were re-estimated over an updated time period, November '78 - September '84. The study team also requested and/or collected data on advertising leads and expenditures, DEP factors, retention, and policy changes. These additional series are useful for model development or market assessment.

The focus of the Accession Contingency Planning Process was narrowed to concentrate on refinement of concepts for the Offline Adjustment Process and the Immediate Contingency Allocation Authority (Chapter III).

The Recruiting Market Assessment Report generated in Phase II, Part 1 is tangible evidence that significant progress has been made in the development of a Recruitment Early Warning System and Accession Contingency Planning Process. The work accomplished provides important steps toward their implementation in Phase II, Parts 2 And 3 of the study.

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INTRODUCTION

The objective of the REWS/ACPP study is to meet the need of the Services and DOD for timely, credible evidence of changes in the recruitment market and streamlined processes with which to respond. The study began in September 1983 and was designed to be undertaken in two phases: Phase I was devoted to assessing the feasibility of developing the REWS and ACPP; given positive findings in Phase I, development and initial implementation of the systems is the task in Phase II.

The work accomplished in Phase I produced promising results. For the REWS, the required national-level data were identified and many of them collected. Numerous forecasting methodologies were examined: For each Service regression models were estimated for high-quality NPS male enlistments, using monthly national-level data for the period January 1976 - March 1983. In forecasting tests, these models accurately predicted the 1983 downturn of enlistments. In addition, univariate models for unemployment accurately predicted the unemployment decline in 1983, and, in the test period, proved to be more accurate than outside sources. Phase I also yielded promising ACPP concepts for streamlining the current budgeting and programming processes. The Offline Adjustment Process (OAP) and the Immediate Contingency Allocation Authority (ICAA) were chosen for further development.

Based on the work accomplished in Phase I, the REWS and ACPP were determined feasible, and the recommendation was made to move into the development and testing of prototype systems in Phase II. Phase II is being undertaken in three parts. This report documents the work accomplished in Part 1 of Phase II: Chapter 1) the collection of additional data for expansion of forecasting models, Chapter 2) the monthly monitoring of the recruitment market, Chapter 3) the development of ACPP concepts, and Chapter 4) the installation of an interim automated REWS while identifying more sophisticated system requirements. The concluding section briefly summarizes the progress made and outlines plans for Phase II, Part 2.

CHAPTER I

EXPANSION OF THE REWS MODELS

A. Collection of Data for New Variables

An important part of Phase II, Part 1 work was the collection of: data for new variables, not included in the Phase I models; data updates for variables that already exist in the models; and data on the recruiting district level that will enable the study team to conduct district-level analysis later in Phase II. Collection efforts are described in the following narrative, and Exhibit 1 summarizes current data status.

1. National-Level Data

In order to construct variables in addition to those analyzed in Phase I, several data series were sought during this contract period, including series on advertising leads and expenditures, DEP attrition, DEP stock, retention, and, perhaps most importantly, recruiting policy changes. These data are important for the purpose of increasing the accuracy of the forecasting models and for providing supporting information for assessment of the recruitment market. The following is a brief description of the status of the collection effort.

a. Advertising Leads and Expenditures

1) For the Marine Corps:

- Monthly leads data for FY83 and FY84 are available and requested; monthly series for FY80-82 can be approximated with annual reports data and application of observed response rates.

REWS DATA CHECKLIST

November 15, 1984

ITEM	STATUS			SOURCE
	REC	REQ	TO BE REQ	
A. Enlistments				
1. Gross Contracts (each Service)				
- nat'l level x cohort, from 7811	X	X		DMDC (690 file since 8310)
- nat'l level x cohort, from ??			X	Services
- district level x cohort, from 7810	X	X		DMDC
B. Field Indicators				
1. Adv. leads, nat'l level				
- Army	77I-83III		X	USAREC
- Navy		X		NRC
- Air Force	7802-8209		X	AFRS
- Marine Corps		X		HQMC
- All Four			X	Admix Test (w/ Service permission)
2. Applicants (each Service)				
- nat'l level x cohort, from 7910	X	X		DMDC (690 file since 8310)
3. Qualified Not Entering			X	MEPCOM/DMDC
4. DEP stock/flows				
a. stock				
b. gross additions				
c. losses				
d. time profile				
- from 8310	X	X		DMDC
- from ____			X	Services
5. First Term Retention: nos. separating, eligible to re-enlist, re-enlisting				
- from 7810	X	X		OSD/MI&L (d50 report from Services)

ITEM	STATUS			SOURCE
	REC	REQ	TO BE REQ	
C. Resources & Policies				
1. Recruiters (each Service)				
- nat'l level	X	X		
- district level (thru 8409)				
— Army	7407-8312		X	USAREC
— Navy	7806-8403	X		NRC
— Air Force	7711-8309		X	AFRS
— Marine Corps		X		HQMC
2. Contract goals/missions (each Service)				
- nat'l level	X	X		
- district level (thru 8409)				
— Army	8001-8403		X	USAREC
-- Navy (Since 8110-??)		X		NRC
— Air Force	7810-8309		X	
— Marine Corps		X		
3. Enlistment incentive and standards		X	X	Services
4. Operational recruiting changes		X	X	Services
D. Labor Market Conditions				
1. Civilian youth earnings	X	X		BLS
2. Male unemployment rates: all, youth				
- nat'l level	X	X		BLS
- district level (thru 8409)		X		BLS, PUCC
3. Exogenous unemployment forecasts	X	X		BEA, GSU, CBO

ITEM	STATUS			SOURCE
	REC REQ	TO BE REQ		
4. Leading economic indicators	X X			BEA
#1 average work week, mfg., prod. workers				
#21 average weekly overtime, mfg. prod. workers				
#5 average weekly initial claims, state unemployment insurance				
#46 index of help-wanted advertising				
#7 new orders, durable goods				
#8 new orders, consumer goods				
#74 industrial prod., nondurable manufacturers				
#75 industrial prod., consumer goods				
#20 contracts & orders, plant & equipment				
#27 new orders, capital goods, non-defense				
#28 new private housing units started				
#29 new building permits, private housing				
#19 index of stock prices, 500 common stocks				
#910 twelve leading indicators				
E. Male Youth population (thru 1985)				
1. - nat'l level	76-83	X		Censu Bureau
- Navy districts	76-83	X		DMDC-East,
- Army, Air Force, Marine Corps districts		X		PUCC

- o Print and direct mail cost reports back to FY80 are available and have been requested; we will tabulate by month of insertion.

- o Broadcast cost and rating point data are also being prepared.

2) For the other Services:
   - o Requests have been made of the Navy for these data.
   - o A meeting with the Air Force has been arranged at which requests for these data will be discussed.
   - o We are attempting to schedule a meeting with Army.

3) We already have:
   - o Quarterly Army leads 1977 I-1983 III
   - o Monthly Air Force leads 7802-8209 (with exception of 8101-8112 which are not available)

4) If collecting the necessary series from each Service becomes unmanageable for any reason, an alternative source for recent data could be the Ad Mix Test from OSD.

b. DEP Data by Service, With Sex, Race, Mental Category, and Education Breaks

1) We have received these data from DMDC for 8310 to present.

2) Updates have been requested from DMDC.

   - o Stock at end of month
   - o Gross additions: number entering DEP during month
   - o DEP losses: number scheduled to access from DEP but not entering
   - o DEP time profile: distribution of stock by month projected to access

3) We have requested data for DEP stock and losses from the Navy, and are preparing similar requests from the other Services.

c. Other Enlistment Pipeline Measures

We are requesting that MEPCOM (through DMDC) provide QNE (qualified and not enlisting) and other related series.

d. Retention and Re-Enlistment Data Requested From OSD/Enlisted Program Management (LtCol. Chris Somers)

1) Monthly figures generally are available back to 1976; they pertain to 1st term, 2nd term, and career decision points.

2) We have obtained FY82 and 83 figures and are receiving the data in two-year installments.

3) From these DOD "850" reports, there are no sex (or mental category) breakdowns; annual reports show a sex breakdown; more detail is available from Services.

4) LtCol. Somers is willing to pass along the monthly reports for up to a year; he is working with DMDC to make the data available on-line from them.

e. Recruiting Policy Changes

1) For Army: We are attempting to schedule a meeting.

2) For Navy: A meeting with NRC policy people is scheduled for November 13; CDR Humphreys acknowledged brakes on contract writing towards end of FY83.

3) For Air Force: A meeting is scheduled for Nov. 16.

4) For the Marine Corps: We are planning to schedule a meeting to brief the MC on model development and latest forecast results, and will elicit policy information at that time. Some information already has been gained in discussions with LtCol. Murphy.

f. Other Items

1) We are putting together a monthly series on Air Force job bank activities -- number of jobs released and number of jobs available over the next 11 months; the former may be a better measure of demand than net reservation goals; the latter may be a better indicator of demand during periods of constrained recruiting.

2) Monthly civilian employment data (non-agricultural) by age cohorts, 7001-present, have been obtained from BLS.

2. Updates for the Existing National-Level Data Base and Current Models

In order to continue to monitor the recruitment market each and provide forecasts nine months out, it has been necessary to update the REWS database and those variables contained in the current models. The national-level updates are being used in the continuing development of the forecasting models, discussed in section B. of this chapter. Updating progress is described below.

a. Gross Contracts

We are receiving these data from DMDC; the procedure is running smoothly.

EXHIBIT 9

AIR FORCE REWS REGRESSION MODELS+

Male HSSR + HSDG Gross Contracts: 7811 - 8409

Parameter Estimates

	Cat. 1-3		Cat. 1-3A	
		(w/out AFLOW)		(w/out G40)
INT.	-8.58*	-6.29	-6.41	2.02
LAFREC	2.09**	1.78**	1.74**	0.57
LFMGPR	0.27	0.50*	0.37*	0.58*
LRELPAY	0.09	0.15	0.10	-0.03
LALL1409	0.53**	0.41*	0.53**	0.55**
SCARCE3	-0.32**	-0.35**	-0.37**	-0.38**
G40	0.33*	0.18	0.34**	----
AFLOW	-0.19*	----	-0.19*	-0.09
S1	0.17*	0.18*	0.18**	0.21**
S2	0.20**	0.21**	0.21**	0.20**
S3	0.10*	0.11*	0.11*	0.11*
S5	0.03	0.04	0.05	0.03
S6	0.08	0.10	0.08	0.07
S7	0.14*	0.14*	0.12*	0.10
S8	0.16*	0.16*	0.15*	0.14*
S9	0.09	0.09	0.06	0.04
S10	-0.06	-0.04	-0.06	-0.01
S11	-0.06	-0.05	-0.04	-0.01
S12	0.07	0.07	0.06	0.08
RHO(1)	-0.40**	-0.46**	-0.37**	-0.51**
RHO(10)			0.28**	
R-SQUARE	0.63	0.57	0.75	0.57
ROOT MSE	0.115	0.119	0.104	0.115

+ SAS Autoregressive Estimation, 11-10-84

* Significantly different from zero at 0.10 level

** Significantly different from zero at 0.01 level

EXHIBIT 8

NAVY REWS REGRESSION MODEL+

1-3A Male HSDG + HSSR Gross Contracts: 7811 - 8409

Parameter Estimates

INT.	-2.82
LNAVREC	1.14*
LNMGPR	0.23*
LRELPAY	0.22
LALL2409	0.77**
NFAT83	0.04
S1	0.16**
S2	0.17**
S3	0.09*
S5	-0.03
S6	0.03
S7	0.12
S8	0.12
S9	-0.02
S10	-0.09
S11	-0.05
S12	0.04
RHO(1)	-0.47**
R-SQUARE	0.77
ROOT MSE	0.096

\+ SAS Autoregressive Estimation, 10-30-84

* Significantly different from zero at 0.10 level

** Significantly different from zero at 0.01 level

EXHIBIT 7

ARMY REWS REGRESSION MODELS+

1-3A Male HSDG + HSSR Gross Contracts

Parameter Estimates

	7811 - 8409	8001 - 8409
INT.	-1.45	4.83
LARMREC	0.96**	0.22
LAGPRSD	—	0.08
LRELPAY	1.40**	1.36**
LALL2409	0.69**	0.67**
ACF	0.22**	0.20**
ACF18	—	—
S1	0.24**	0.19**
S2	0.18**	0.17**
S3	0.13**	0.15**
S5	0.02	-0.04
S6	0.14**	0.12*
S7	0.17**	0.16**
S8	0.13**	0.11*
S9	0.00	0.02
S10	-0.11*	-0.09*
S11	-0.07*	-0.06
S12	-0.04	-0.01
RHO(2)	0.33**	
RHO(24)	0.29**	
R-SQUARE	0.98	0.96
ROOT MSE	0.088	0.077

+ SAS Autoregressive Estimation, 10-30-84

* Significantly different from zero at 0.10 level

** Significantly different from zero at 0.01 level

5. Inconsisten t Series

Unreasonably large differences were found between DMDC gross contracts series and Air Force net reservation production and Army net mission production for several months. The matter is under investigation. To win over Service confidence in the REWS modeling, it may become necessary to develop parallel models with DMDC and Service-provided enlistment series. (However, Air Force net reservations production does not seem to be a good measure of current recruitment business.)

6. Evaluation of Re-estimated Models

The most recently estimated models are presented in Exhibits 7-10. Goodness of fit is highest for the Army and Marine Corps and lowest for the Air Force. Multicollinearity continues to produce unstable coefficient estimates, with the possible exception of unemployment.

Goals per recruiter in the Army, as a proxy for recruiter work effort, have a small effect. Based on testing not shown, it appears this is not a result of multicollinearity. We speculate that the recent occurrence of unrealistically high missions has lessened their usefulness as an explanatory variable.

We suspect that there are policy changes in Navy recruiting that have not been identified and captured as yet. A simple dummy indicator of contract-writing curtailment over the June-September 1983 period is not working as expected.

The Air Force model is comparatively rich in policy variables, yet the fit is comparatively poor. The results indicate the importance of policy variables — the drop in the explained variation when either AFLOW or G40 is excluded — as well as high intercorrelations among these and recruiters and goals.

EXHIBIT 6

MARINE CORPS VARIABLE DEFINITIONS IN REWS

1. LMCDS13(A) = (logarithm of) Marine Corps 1-3 (1-3A) male HSDG + HSSR gross contracts (Source: DMDC).

2. LMCREC = (logarithm of) on-board recruiters (Source: HQ USMC).

3. LMCGPR = (logarithm of) regular male (net) new contract goals divided by recruiters (Source: HQ USMC).

4. MCEILING = binary variable that reflects reduction of Cat. IV ceiling from 10 to 0 percent over the April 1983 - March 1984 period (positive coefficient expected for high-quality cohorts).

5. FULL83 = binary variable that reflects a halt to writing of contracts during the July - September 1983 period with FY 1983 EAD dates (negative coefficient expected).

EXHIBIT 5

AIR FORCE VARIABLE DEFINITIONS IN REWS

1. LAFDS13 = (logarithm of) Air Force 1-3 male HSDG + HSSR ç oss contracts (Source: DMDC).

2. LAFREC = (logarithm of) NPS production recruiters (Source: AFRS).

3. LFMGPR = (logarithm of) male net reservation goals divided by NPS production recruiters (Source: AFRS and own calculations); male net reservation goals derived as follows:

   7811-7909: average annual male percent EAD goal applied to 1/12 of annual NPS net reservation goal;

   7910-8309: average annual male percent EAD goal applied to monthly NPS net reservation goal;

   8310-present: as reported by AFRS.

4. SCARCE3 = binary variable that reflects limited number of jobs available for sale relative to goals during the April 1977 - March 1979 period (negative coefficient expected).

5. G40 = binary variable that reflects increase in mental enlistment standards, beginning October 1982 (positive coefficient expected for high-quality cohorts).

6. AFLOW = binary variable that reflects restrictive job booking practices, December 1982 - November 1983 (negative coefficient expected).

EXHIBIT 4

NAVY VARIABLE DEFINITIONS IN REWS

1. LNDS13A = (logarithm of) Navy 1-3A male HSDG + HSSR gross contracts (Source: DMDC).

2. LNAVREC = (logarithm of) production plus fixed overhead recruiters (Source: NRC).

3. LNMGPR = (logarithm of) 1-3A active duty male (net) new contract objectives divided by recruiters (as defined above);

for FY82 - present: percent active-duty-male accession goals are applied to total new contract objectives to estimate active-duty-male new contract objectives; upper mental group targets ranging from 60 to 65 percent are subsequently applied;

for FY80 - 81: active-duty-male accession goals are used as proxy for (nonexistent) active-duty-male new contract objectives; upper mental group target of 60 percent is subsequently applied (Source: NRC and own calculations).

4. NFAT83 = binary variable that reflects restrictions on writing contracts during the June-through-September 1983 period (negative coefficient expected).

EXHIBIT 3

ARMY VARIABLE DEFINITIONS IN REWS

1. LADS13A = (logarithm of) Army 1-3A male HSDG + HSSR gross contracts (Source: DMDC).

2. LARMREC = (logarithm of) production recruiters assigned (to zero, half or full missions) (Source: USAREC).

3. LAGPRSD = (logarithm of) 1-3A HSDG + HSSR male net missions divided by production recruiters assigned (Source: USAREC and own calculations).

4. ACF = binary variable that reflects availability of Army College Fund benefits in its "mature" form beginning October 1981 (positive coefficient expected).

5. ACF18 = binary variable that reflects availability of Army College Fund benefits with kicker payments increased to $18,300 for selected MOS's, beginning October 1984.

EXHIBIT 2

COMMON VARIABLE DEFINITIONS IN REWS

1. LRELPAY = (logarithm of) first year military pay divided by annual earnings of 16-24 year-old civilian males, and derived as follows:

   BMC (basic military compensation) weighted by time-in-grade, assuming single status (Source: OSD);

   Civilian earnings for full-time workers, quarterly averages are assumed constant for three month periods (Source: Bureau of Labor Statistics from Current Population Survey).

2. LALL1(2)XXX = (logarithm of) civilian male unemployment rate, lagged one (two) period(s) (Source: Bureau of Labor Statistics from Current Population Survey).

3. S1 ... S12 = binary seasonal variables, relative to April.

4. RHO(X) = autoregressive coefficients, statistically significant at lag(s) = x.

B. REWS Forecasting Model Developments

1. Re-estimated Models

Regression models for each Service were re-estimated over the 7811 - 8406 period for the September 1984 Assessment Report, and over the 7811 - 8409 period for the October 1984 Assessment Report.

2. Combined Cohorts

Initially, the HSDG and HSSR cohorts were combined for convenience and because our earlier forecasting tests indicated that the errors in the combined models were no larger than the sum of separate models (with the exception of the Marine Corps). Subsequently, we learned that the HSDG-HSSR distinction, made after the fact with historical files, is not precise: education status in the DMDC enlistment records apparently undergoes some updating beyond the contract-date point. Thus, the combined measure suffers from less measurement error than its components.

3. Additional Model

In response to a request from LtCol. Murphy, a regression model was specified and estimated for the Marine Corps HSDG plus HSSR 1-3A cohort in addition to the 1-3 cohort.

4. New Policy Variables

Several new policy variables were incorporated into the Navy, Air Force, and Marine Corps regression models — see Exhibits 2-6 for a description. In addition, a measure of Navy male contract objectives was derived (see Exhibit 4).

1) Army "React" leads, 1977 I - 1983 III.

2) Air Force qualified leads, 7802-8301 (with the exception of 8101-8112 data which is not available).

e. Unemployment

County-level (overall) unemployment and labor force series, 7601-8409, have been ordered from BLS; Princeton University Computer Center (PUCC) is processing information to produce a monthly time series of unemployment rates at the recruiting district-level for each Service; tape and hardcopy output is expected in December.

f. Youth Earnings

From the 1980 Census Microsample A, PUCC has provided us with earnings tabulations by sex, ethnicity, and age at the recruiting district-level for each Service. These cross sections can be aged back to 1978 and forward to the present with quarterly national-level estimates from BLS.

g. Youth Population

From the 1980 Census Microsample A, PUCC has provided us with population tabulations by sex, ethnicity, age, and school status cohorts at the recruiting district-level for each Service.

We have thus far produced annual time series, 1976-83, by Navy districts for four cohorts, using previously obtained county-level estimates for three points in time.

2) We have requested:

- o Marine Corps: 7811-present; request made August 17;
- o Updates through 8409 from the Navy.

3) We are preparing requests for Army and Air Force updates through 8409.

NOTE: As a backup source, we have quarterly reports from DMDC for each Service; the series are continuous, beginning 1981 I and ending 1983 IV; updates are readily available.

c. Monthly Contract Goals/Missions by Own Service Boundaries:

1) Army: We have 8001-8403 net contract missions by cohort; source, USAREC.

2) Navy: Use of contract goals began 8110; it may be possible to splice accession goal series for prior years; request for data through 8409 has been made.

3) Air Force: We have annual squadron-level male net reservations goals for FY78-82; monthly numbers can be approximated at 1/12 or using monthly-level national series. (We will seek permission to use these for REWS.)

4) Marines: regular male goal series requested from 7811 to present; request made August 17.

d. Leads and Expenditures

At this time we are not planning to collect data in addition to those we have. We have the following data:

3. District-Level Data

In preparation for the testing of district-level models in Phase II, Part 3 of the study, we have been constructing a district-level database during this contract period. For each Military Service, we have sought regional-level monthly data for the period October 1978 - September1984. The regions correspond to the recruiting district-level boundaries of each Service in FY 1983. The completed database will include gross contracts for HSDG's and HSSR's, unemployment, civilian earnings, recruiters, advertising leads and expenditures, and goals. Sources for these data are DMDC, the Bureau of Labor Statistics, Princeton University Computer Center, the Services, and OSD. The following progress was made in this collection effort.

a. Monthly Enlistment Data

The data requested from DMDC toward the end of August have been received. (See previous report for more information.) The applicant series has not been requested.

b. Monthly Recruiter Allocations by Own Service Boundaries

1) We have collected:

- Army: 7407-8312 production recruiters assigned; source, USAREC;
- Navy: 7806-8403 production and fixed-overhead recruiters; source, NRC;
- Air Force: 7711-8309 NPS production recruiters; source, AFRS;

b. Gross Applicants

Same as above.

c. NPS Production Recruiters and Contract Goals

Each month we send to Mr. Gerry Klopp at USAREC and LtCol. Jim Murphy at Marine Headquarters a table of our most current projections on recruiters and goals. We request them to revise these data where appropriate, and report the revisions to us in the follow-up phone call we make to them a few days later. Similar systems will be worked out with Navy and Air Force. At present updating is accomplished by phone calls.

d. Unemployment Data

Updating procedure is running smoothly.

e. Civilian Earnings

Updates for third quarter data on 16-24 male full-time median weekly earnings have been received. Fourth quarter data are due out at the end of January.

f. Leading Economic Indicators

We have updated 11 indicators, and we are building series for four more.

h. "Outside" Unemployment Rate Forecasts

The most recent available forecasts have been obtained from BEA, CBO, and Georgia State University.

EXHIBIT 10

MARINE CORPS REWS REGRESSION MODELS+

Male HSDG + HSSR Gross Contracts: 7811 - 8409

Parameter Estimates

	Cat. 1-3	Cat. 1-3A
INT.	-1.37	-2.87*
LMCREC	1.08**	1.16**
LMCGPR	0.17*	0.18*
LRELPAY	1.63**	0.80**
LALL2409	0.24**	0.45**
MCEILING	0.03	0.00
FULL83	—	-0.02
S1	0.31**	0.28**
S2	0.27**	0.23**
S3	0.13**	0.09
S5	0.01	0.01
S6	0.41**	0.34**
S7	0.34**	0.32**
S8	0.32**	0.28**
S9	0.23**	0.16**
S10	0.23**	0.19**
S11	0.20**	0.22**
S12	0.17**	0.15**
RHO(24)	0.31**	
RHO(8)		0.26*
RHO(10)		0.35**
R-SQUARE	0.96	0.97
ROOT MSE	0.080	0.084

\+ SAS Autoregressive Estimation, 10-30-84

* Significantly different from zero at 0.10 level

** Significantly different from zero at 0.01 level

The strength of seasonal factors is striking in the Marine Corps models. The policy change variables included thus far are not particularly important.

Over the FY 1984 period, the models tend to underpredict, especially in the Navy and Air Force. Within-sample average monthly absolute and arithmetic errors are shown below for FY 1984. Not unexpectedly, there is considerable cancelling of errors.

	Absolute	Arithmetic*
Army 1-3A	262	51
Navy 1-3A	150	76
Air Force 1-3	332	93
Marine Corps 1-3	83	14
Marine Corps 1-3A	69	4

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* Actual minus predicted values.

CHAPTER II

ASSESSMENT OF THE RECRUITMENT MARKET

At the end of Phase I of the REWS/ACPP study, the prototype REWS models were used to monitor the status of the recruitment market and yield forecasts of unemployment and enlistments for nine months out. The results of this work was used to produce the first REWS monthly assessment report of the recruiting market. In this portion of the study we have continued to monitor the recruiting environment, and, using updated and further developed models, have produced additional monthly assessment reports.

This chapter consists of the most recent Recruiting Market Assessment Report, dated October 1984. The graphs and tables in this report were produced by the automated REWS batch processing system developed during this portion of the study, and described in Chapter IV. It is representative of the kinds graphical and tabular presentations of data that the REWS is presently capable of producing. Many other presentation formats are possible and will be explored as the study progresses.

The assessment report presented here incorporates a 24-month historical trend period and a nine-month forecast period. Data is given in tabular form, for each Service, on actual and forecasted gross and net enlistment contracts, upper and lower 90 percent confidence intervals for forecasts, actual and projected goals and recruiters, and the ratio of contracts to goals. These data are used to construct the graphs in the report which depict visually the relationship of contracts to goals, and thus, the alert status. In addition, tables and graphs give data on historical unemployment rates and those forecasted by REWS and outside sources. Future assessment reports may include data on other variables as well. The report includes definitions of the variables, derivation of the adjustment factors used to calculate high-quality goals, and the conversion factors for gross to net contracts.

RECRUITMENT EARLY WARNING SYSTEM

RECRUITING MARKET ASSESSMENT REPORT

October 1984

Economic Research Laboratory, Inc.
1914 Association Drive
Reston, Virginia 22090

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APPENDIX

REWS RECRUITING MARKET ASSESSMENT

DEFINITIONS: ENLISTMENTS AND RECRUITERS

1. Gross Contracts indicate the number enlisting as direct ships or signing DEP contracts during the month. Source: DMDC. Subsequent cancellation is reflected in net contract measure.

2. Recruiters:

   a. Army — production recruiters assigned to zero, half, or full missions. Source: USAREC.

   b. Navy — production plus fixed overhead recruiters. Source: NRC.

   c. Air Force — NPS production recruiters. Source AFRS.

   d. Marine Corps — on-board recruiters. Source: HQMC.

DERIVATION OF HIGH-QUALITY NET GOALS

1. Army

   Goals promulgated as net missions for male 1-3A combined HSDG and HSSR cohorts (GSM13A).

2. Navy

   - FY85: Net goal refers to "A-cell" target that is 50 percent of male new contract objectives (MNCO).

   - FY83 and FY84: "A-cell" target is 67 percent of MNCO.

3. Air Force

   Net goal refers to HSDG-HSSR tsrget of 98 percent and 1-3 target of 98 percent; they are applied multiplicatively to male net reservations goals to produce a net goal that is 96 percent of the total male net reservations goal.

4. Marine Corps

   - Net goal for 1-3 HSDG-HSSR cohort is 92 percent of regular male goals.

   - Net goal for 1-3A HSDG-HSSR cohort is 60 percent of regular male goals.

REWS RECRUITING MARKET ASSESSMENT

CONVERSION FACTORS: GROSS TO NET CONTRACTS (percentage)

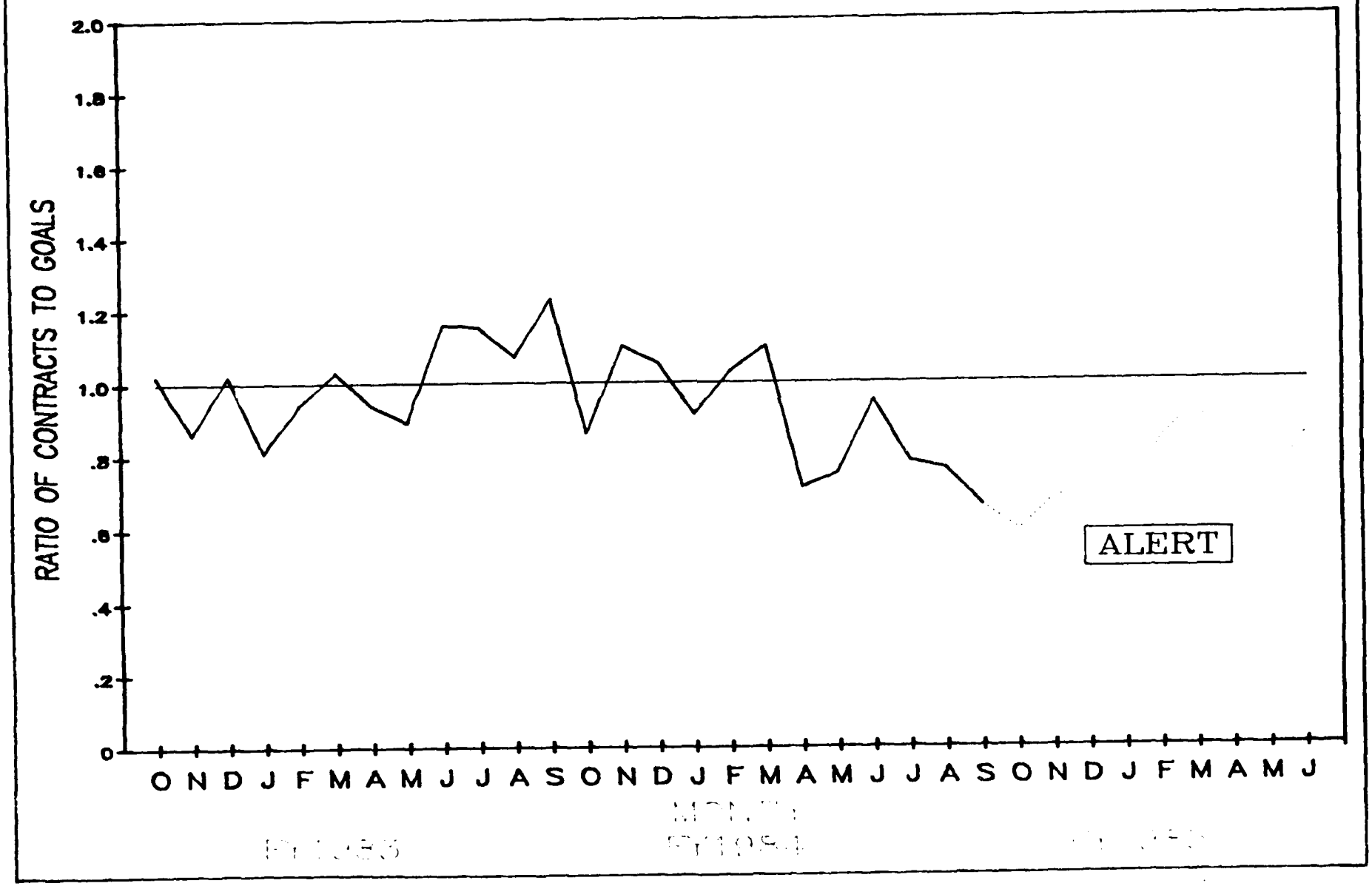
Army 1-3A	94.1
Navy 1-3A	89.5
Air Force 1-3	91.7
Marine Corps 1-3	91.9
Marine Corps 1-3A	91.4

These factors were derived from the ratio of FY1982 net contracts to gross contracts for the combined male HSDG and HSSR cohorts. They reflect failure to graduate as well as DEP attrition.

SECTION I: ARMY RECRUITING OUTLOOK

ARMY CONTRACTS/GOALS

NPS MALE 1-5A HSDG ALL [illegible] CONTRACTS



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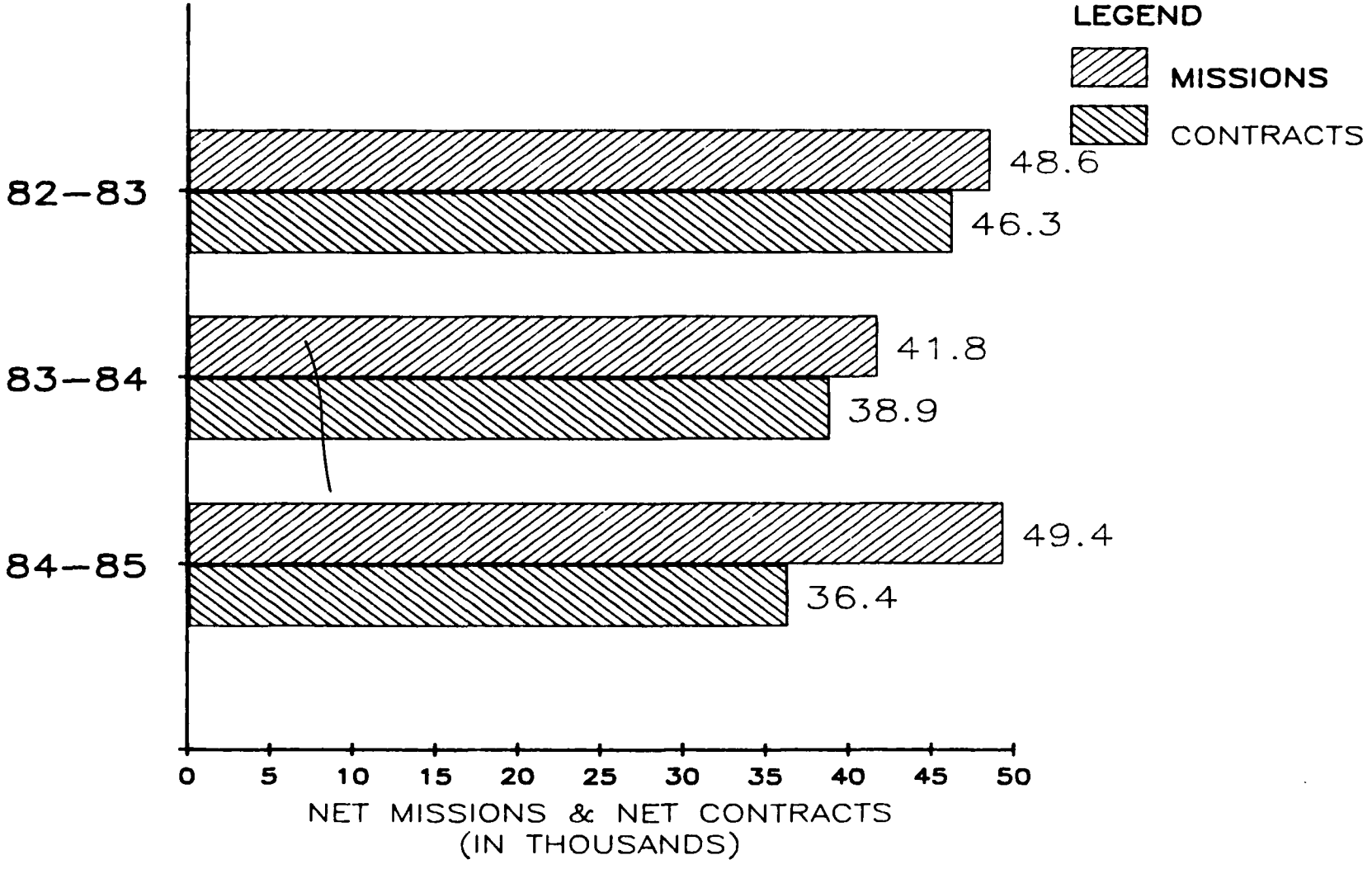
ARMY NET MISSIONS VS NET CONTRACTS

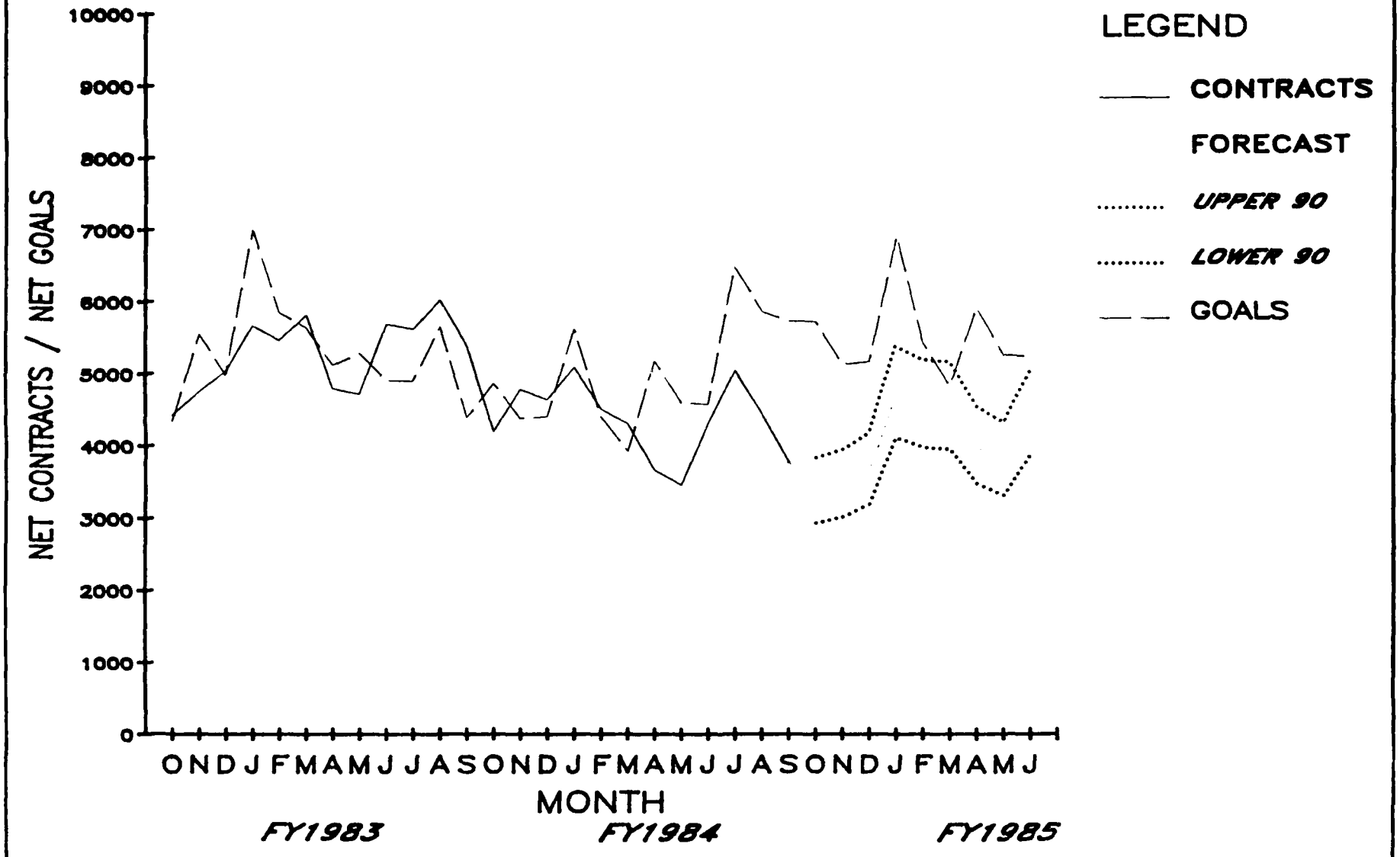
NPS MALE 1–3A HSDG's

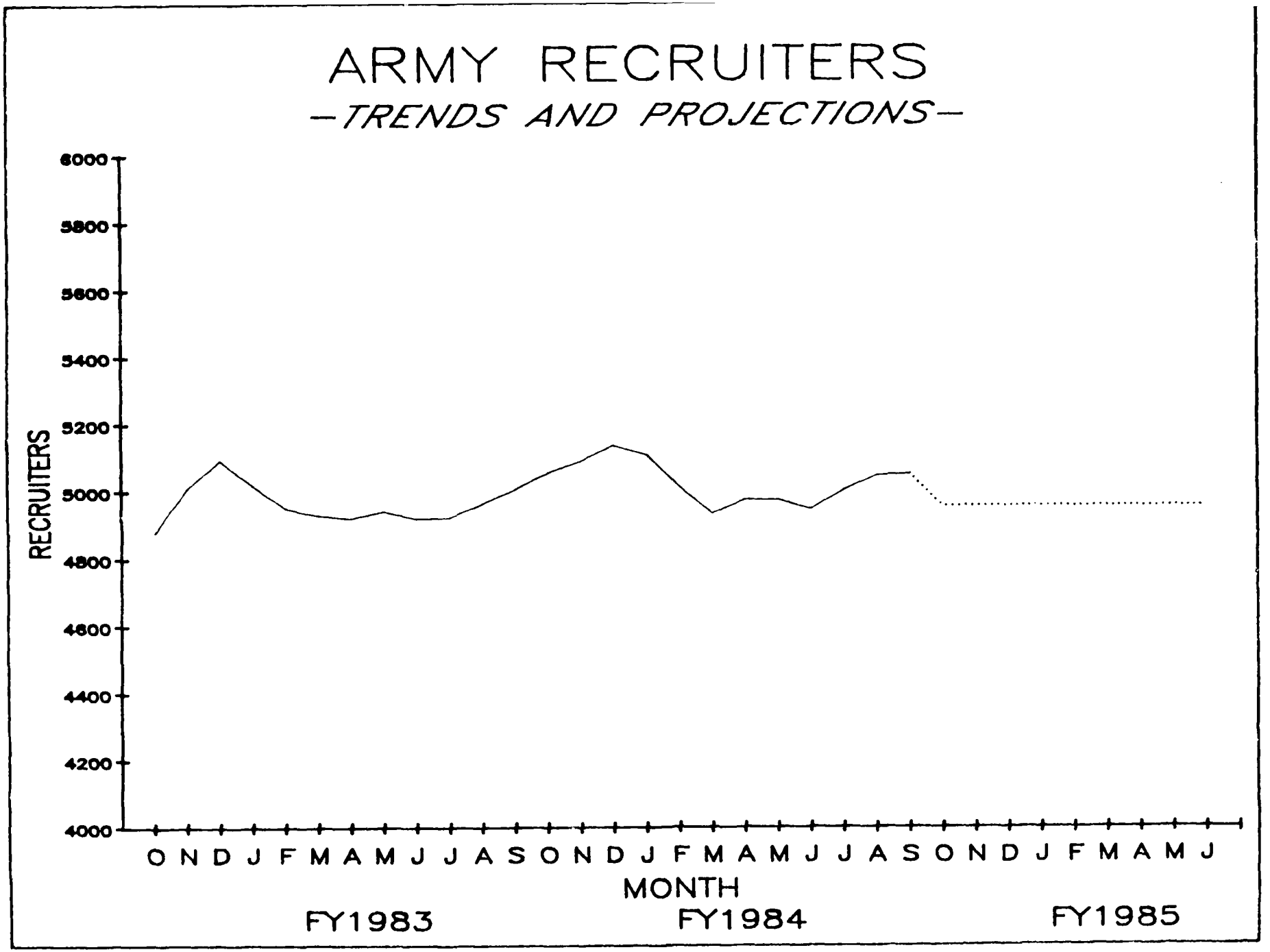
OCT–JUNE TIME INTERVALS



FORECASTS FOR OCT–JUNE, 1985 CONTRACTS

FORECASTS OF ARMY ENLISTMENT CONTRACTS
NPS MALE 1–3A HSDG's




ARMY RECRUITERS
-TRENDS AND PROJECTIONS-
RECRUITERS
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
MONTH
FY1983
FY1984
FY1985

ARMY RECRUITING OUTLOOK
NPS MALE 1-3A HSDG AND HSSR CONTRACTS

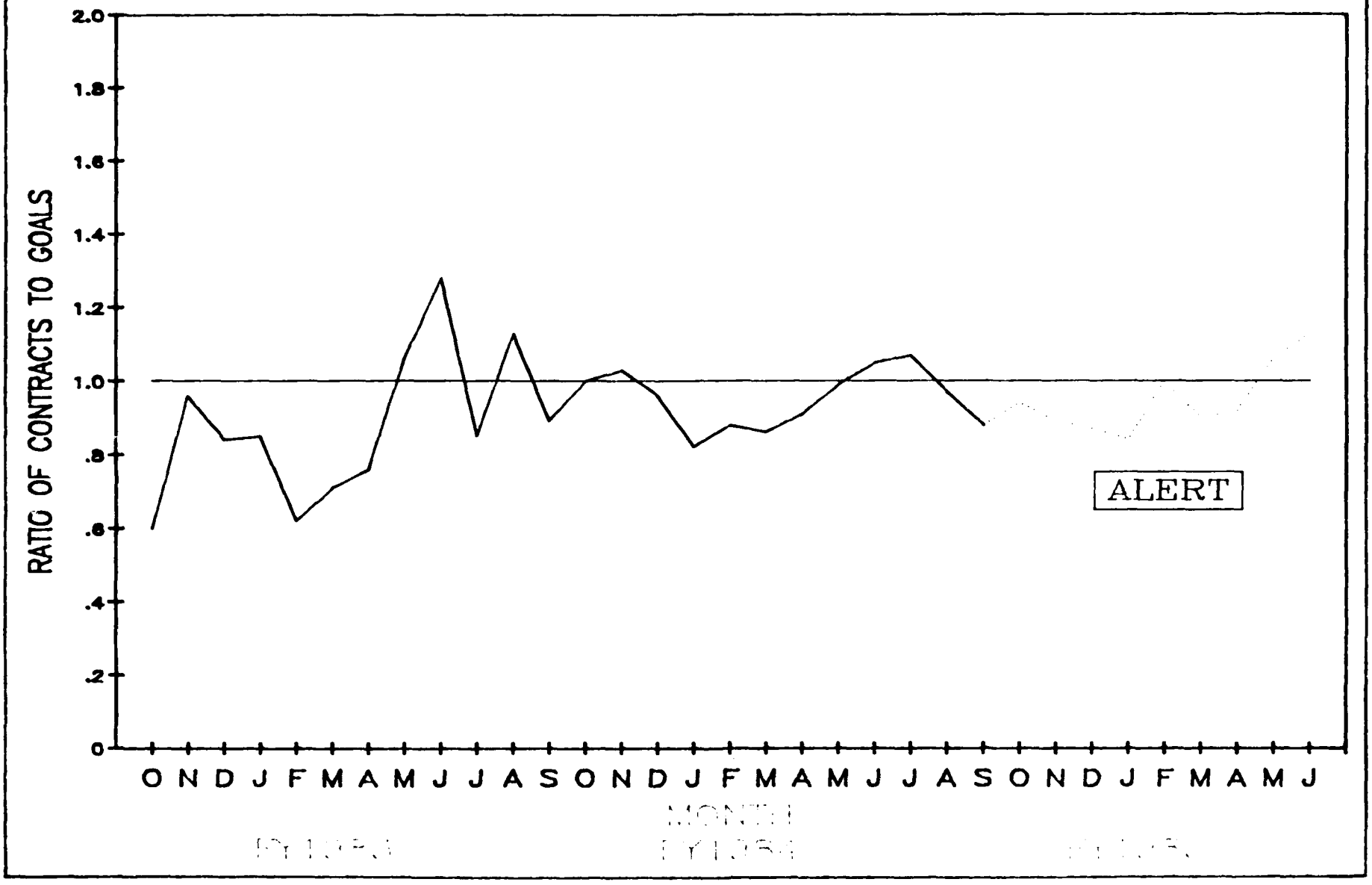
-TWENTY-FOUR MONTH HISTORICAL TRENDS-

DATE	GROSS CONTRACTS	NET CONTRACTS	1-3A GOALS	CONTRACTS / GOALS	RECRUITERS
OCT 82	4710	4432	4337	102%	4877
NOV 82	5051	4753	5543	86%	5008
DEC 82	5358	5042	4966	102%	5092
JAN 83	6026	5670	6991	81%	5017
FEB 83	5799	5457	5835	94%	4949
MAR 83	6179	5814	5625	103%	4926
APR 83	5090	4790	5105	94%	4917
MAY 83	5009	4713	5284	89%	4940
JUN 83	6049	5692	4896	116%	4916
JUL 83	5962	5610	4887	115%	4920
AUG 83	6400	6022	5641	107%	4962
SEP 83	5718	5381	4378	123%	5004
OCT 83	4453	4190	4858	86%	5054
NOV 83	5082	4782	4362	110%	5089
DEC 83	4917	4627	4394	105%	5135
JAN 84	5410	5091	5610	91%	5105
FEB 84	4787	4505	4393	103%	5010
MAR 84	4566	4297	3909	110%	4930
APR 84	3888	3659	5167	71%	4972
MAY 84	3670	3453	4585	75%	4970
JUN 84	4583	4313	4557	95%	4942
JUL 84	5356	5040	6476	78%	4999
AUG 84	4711	4433	5842	76%	5043
SEP 84	4000	3764	5709	66%	5047

-NINE MONTH FORECAST PERIOD-

GROSS CONTRACTS	FORECASTS MEAN	OF NET UPPER 90	CONTRACTS LOWER 90	1-3A GOALS	CONTRACTS / GOALS	RECRUITERS
3561	3351	3817	2923	5702	59%	4950
3668	3452	3931	3010	5111	68%	4950
3885	3656	4164	3189	5159	71%	4950
5004	4709	5363	4107	6899	68%	4950
4825	4540	5171	3960	5409	84%	4950
4798	4515	5143	3938	4810	94%	4950
4225	3976	4528	3468	5905	67%	4950
4014	3777	4301	3294	5234	72%	4950
4714	4436	5053	3869	5218	85%	4950
38694	36412	41471	31758	49447	74%	4950 (AVG)

MARINE CORPS CONTRACTS/GOALS



SECTION IV: MARINE CORPS RECRUITING OUTLOOK

AIR FORCE RECRUITING OUTLOOK
NPS MALE 1-3 HSDG AND HSSR CONTRACTS

-TWENTY-FOUR MONTH HISTORICAL TRENDS-

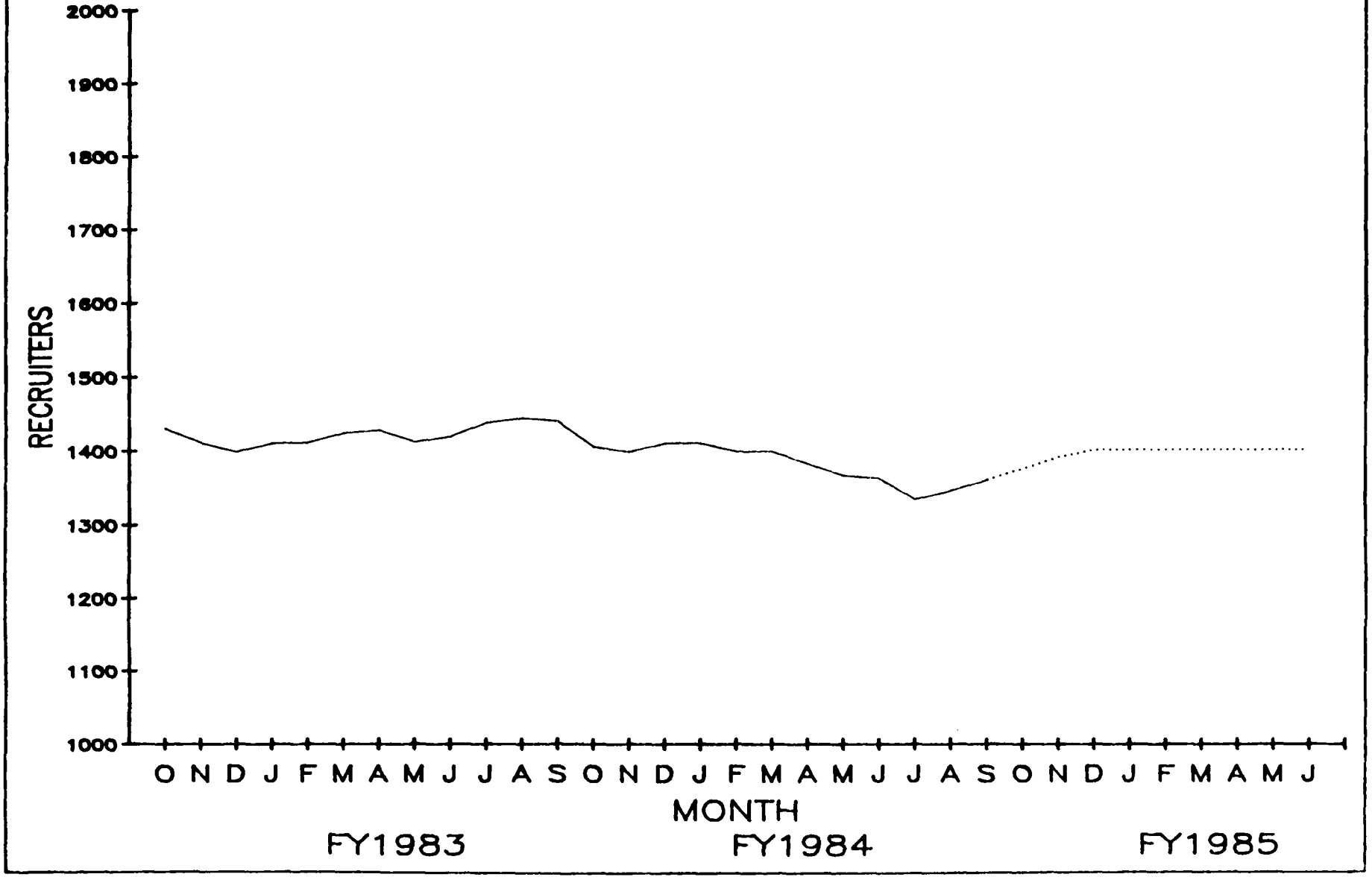
DATE	GROSS CONTRACTS	NET CONTRACTS	AF GOALS	1-3 GOALS	CONTRACTS / GOALS	RECRUITERS
OCT 82	3836	3518	4479	4300	82%	1430
NOV 82	4093	3753	4479	4300	87%	1410
DEC 82	3940	3613	4479	4300	84%	1398
JAN 83	4279	3924	4009	3849	102%	1410
FEB 83	3808	3492	4009	3849	91%	1411
MAR 83	4172	3826	3754	3604	106%	1424
APR 83	3805	3489	3754	3604	97%	1428
MAY 83	3977	3647	3754	3604	101%	1411
JUN 83	4004	3672	3725	3576	103%	1419
JUL 83	4039	3704	3748	3598	103%	1438
AUG 83	4492	4119	3754	3604	114%	1444
SEP 83	4271	3917	4095	3931	100%	1439
OCT 83	3715	3407	3885	3730	91%	1404
NOV 83	3775	3462	3919	3762	92%	1397
DEC 83	5505	5048	4351	4177	121%	1409
JAN 84	4868	4464	4740	4550	98%	1410
FEB 84	4686	4297	4340	4166	103%	1398
MAR 84	4535	4159	4600	4416	94%	1398
APR 84	4147	3803	4515	4334	88%	1381
MAY 84	4095	3755	4515	4334	87%	1365
JUN 84	3854	3534	4515	4334	82%	1361
JUL 84	4158	3813	4515	4334	88%	1333
AUG 84	3753	3442	4515	4334	79%	1345
SEP 84	4241	3889	4515	4334	90%	1360

-NINE MONTH FORECAST PERIOD-

GROSS CONTRACTS	FORECASTS OF NET CONTRACTS MEAN	UPPER 90	LOWER 90	AF GOALS	1-3 GOALS	CONTRACTS / GOALS	RCTRS
3864	3543	4215	2944	4250	4080	87%	1375
3887	3564	4239	2961	4303	4131	86%	1390
4293	3937	4682	3270	4569	4386	90%	1400
4786	4389	5220	3647	4726	4537	97%	1400
5082	4660	5543	3872	5023	4822	97%	1400
4866	4462	5307	3707	4536	4355	102%	1400
4176	3829	4554	3181	4272	4101	93%	1400
4214	3864	4589	3216	3997	3837	101%	1400
4526	4150	4875	3502	4335	4162	100%	1400
39694	36398	43224	30300	40011	38411	95%	1400 (AVG)

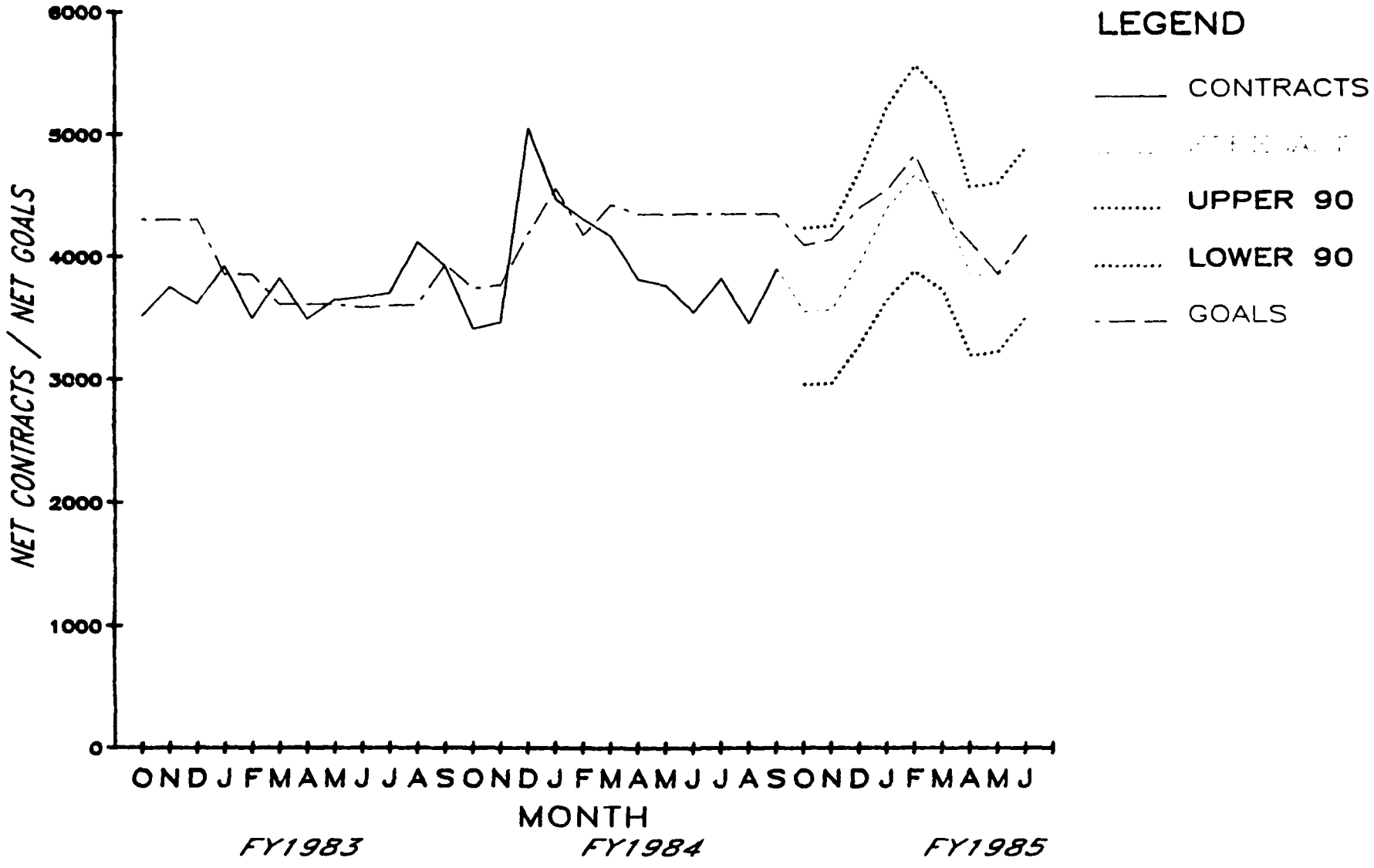
AIR FORCE RECRUITERS

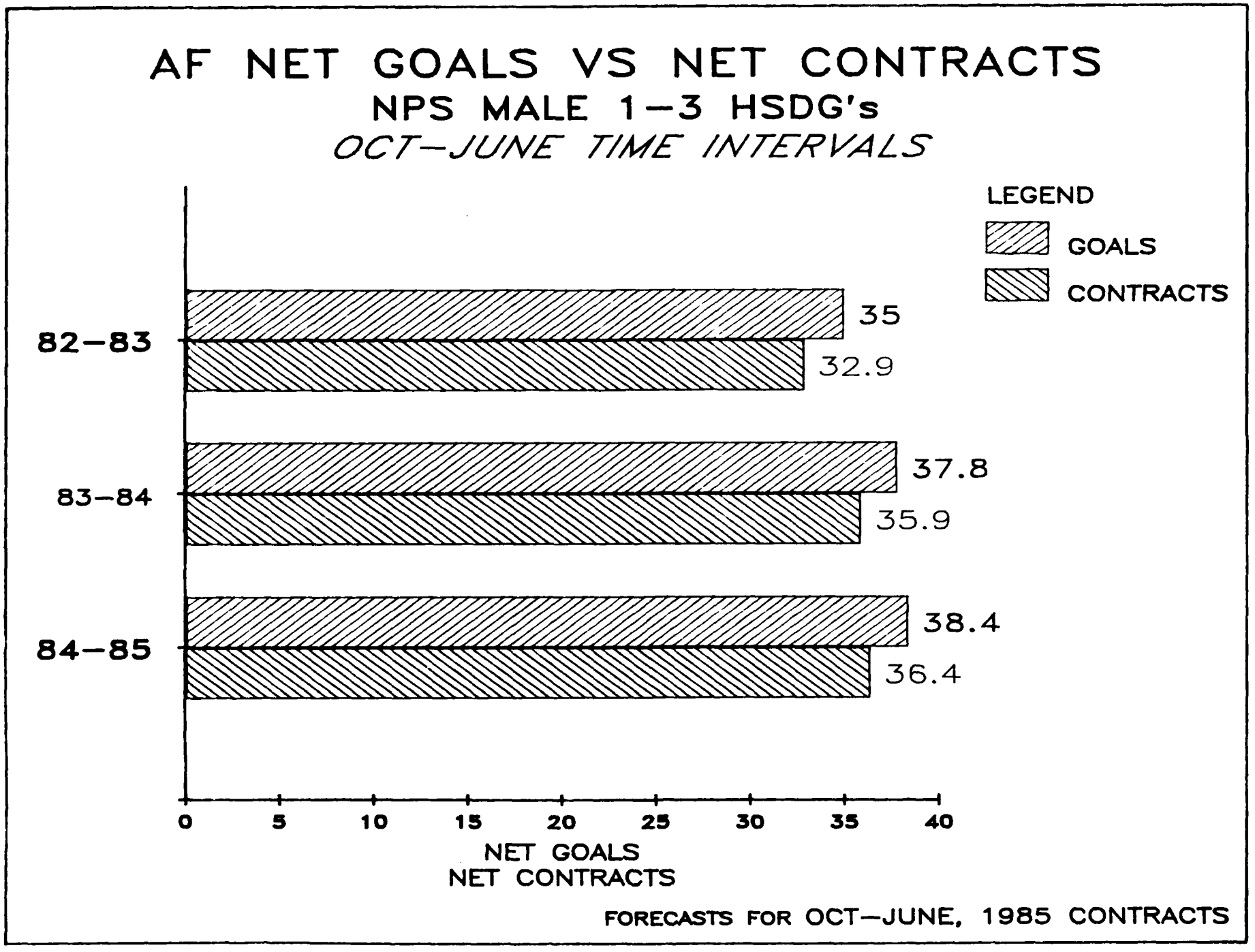
—TRENDS AND PROJECTIONS—



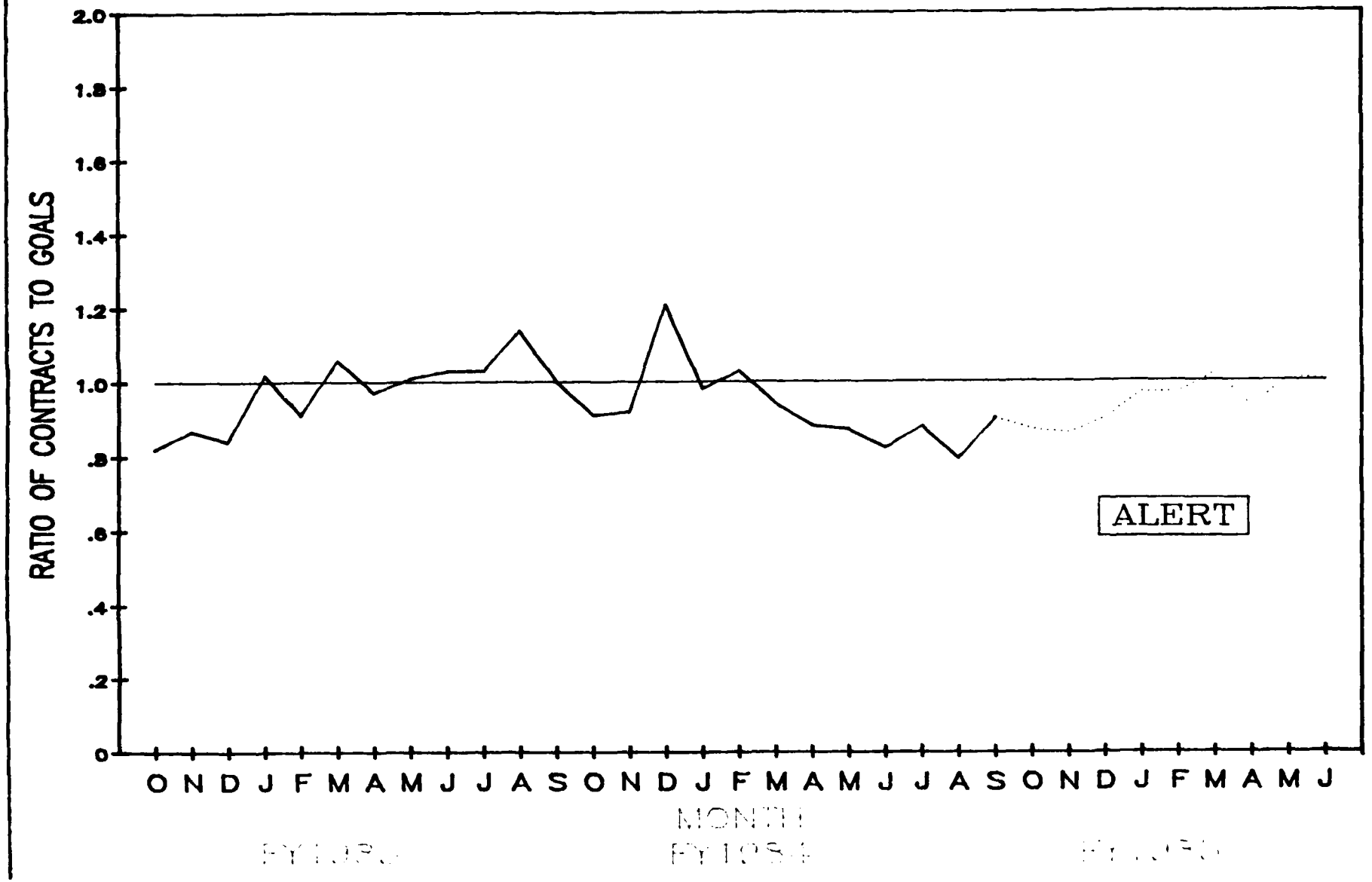
FORECASTS OF A.F. ENLISTMENT CONTRACTS

NPS 1–3 MALE HSDG's




AF NET GOALS VS NET CONTRACTS
NPS MALE 1–3 HSDG's
OCT–JUNE TIME INTERVALS
LEGEND
GOALS
CONTRACTS
82–83
35
32.9
83–84
37.8
35.9
84–85
38.4
36.4
0
5
10
15
20
25
30
35
40
NET GOALS
NET CONTRACTS
FORECASTS FOR OCT–JUNE, 1985 CONTRACTS

AIR FORCE CONTRACTS/GOALS



SECTION III: AIR FORCE RECRUITING OUTLOOK

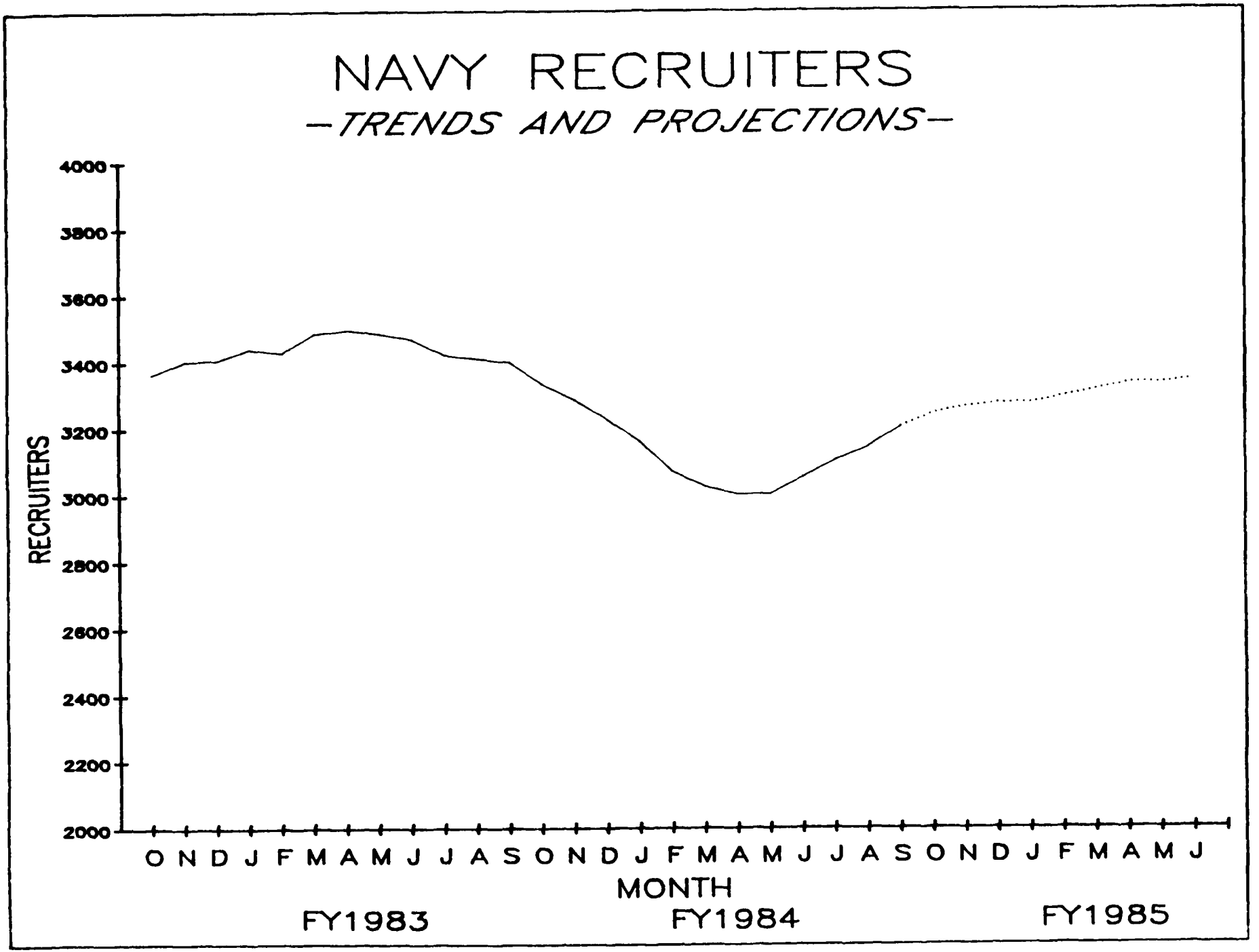
NAVY RECRUITING OUTLOOK
NPS MALE 1-3A HSDG AND HSSR CONTRACTS

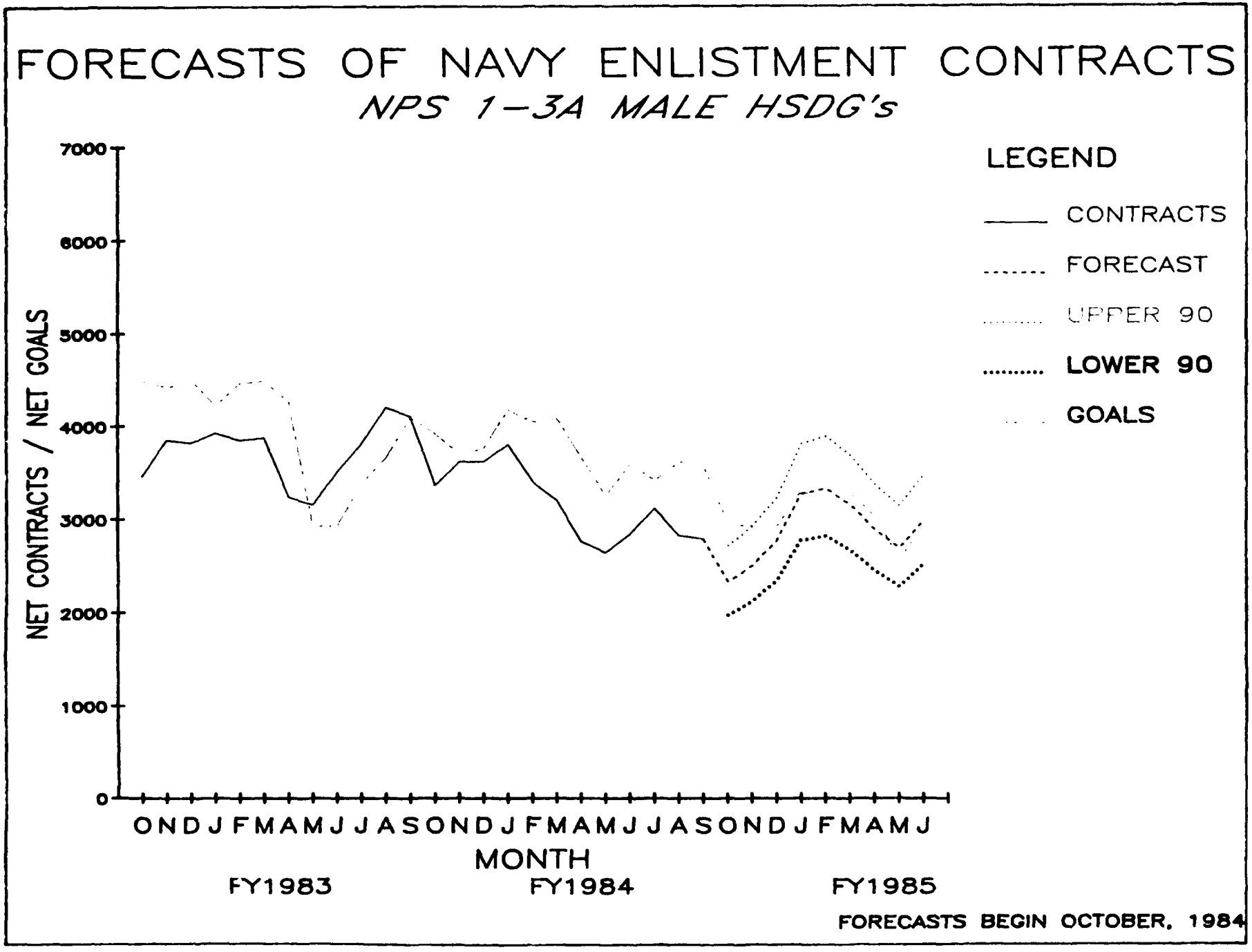
-TWENTY-FOUR MONTH HISTORICAL TRENDS-

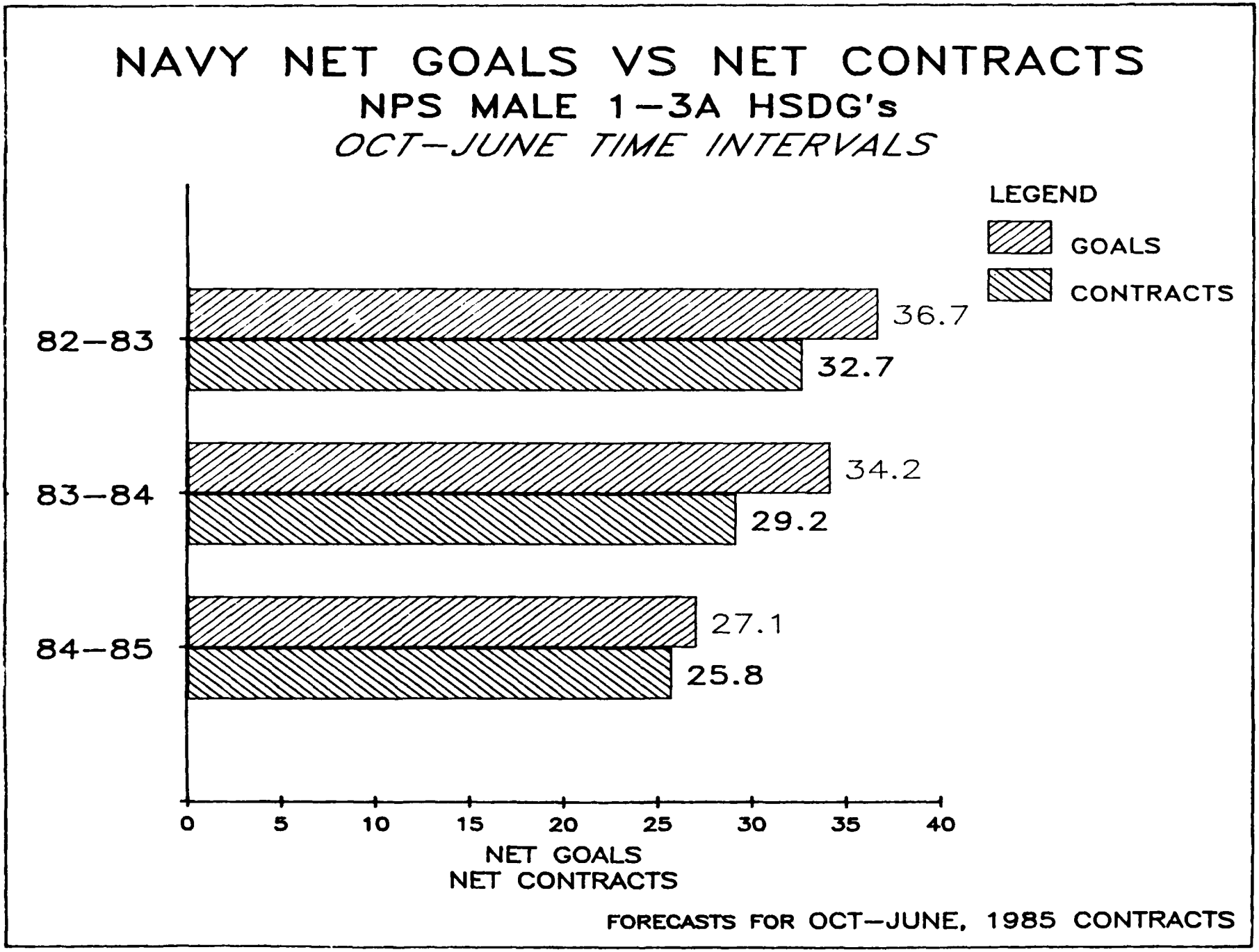
DATE	GROSS CONTRACTS	NET CONTRACTS	ACTIVE DUTY GOALS	1-3A GOALS	CONTRACTS / GOALS	RECRUITERS
OCT 82	3868	3462	7972	4486	77%	3364
NOV 82	4300	3849	7855	4421	87%	3404
DEC 82	4260	3813	7998	4501	85%	3407
JAN 83	4385	3925	7506	4224	93%	3441
FEB 83	4293	3842	7937	4467	86%	3427
MAR 83	4327	3873	7982	4492	86%	3485
APR 83	3613	3234	7580	4266	76%	3497
MAY 83	3516	3147	5201	2927	108%	3484
JUN 83	3921	3509	5201	2927	120%	3467
JUL 83	4252	3806	6023	3390	112%	3419
AUG 83	4697	4204	6511	3664	115%	3408
SEP 83	4579	4098	7267	4090	100%	3396
OCT 83	3748	3354	6966	3920	86%	333.
NOV 83	4037	3613	6568	3696	98%	3283
DEC 83	4039	3615	6683	3761	96%	3224
JAN 84	4247	3801	7426	4179	91%	3158
FEB 84	3789	3391	7183	4043	84%	3067
MAR 84	3568	3193	7255	4083	78%	3020
APR 84	3075	2752	6486	3650	75%	2997
MAY 84	2939	2630	5768	3246	81%	2999
JUN 84	3165	2833	6384	3593	79%	3050
JUL 84	3473	3108	6059	3410	91%	3100
AUG 84	3143	2813	6419	3613	78%	3140
SEP 84	2763	2473	6328	3561	69%	3200

-NINE MONTH FORECAST PERIOD-

DATE	GROSS CONTRACTS	FORECAST OF NET CONTRACTS MEAN	UPPER 90	LOWER 90	ACTIVE DUTY GOALS	1-3A GOALS	CONTRACTS / GOALS	RCTRS
OCT 84	2586	2314	2706	1961	3835	2949	78%	3240
NOV 84	2786	2493	2915	2112	3792	2916	85%	3260
DEC 84	3076	2753	3218	2332	3791	2915	94%	3270
JAN 85	3640	3258	3808	2760	4290	3299	99%	3270
FEB 85	3710	3320	3882	2813	4142	3185	104%	3290
MAR 85	3511	3142	3674	2663	4254	3271	96%	3310
APR 85	3214	2877	3363	2437	3930	3022	95%	3330
MAY 85	2993	2679	2132	2269	3336	2565	104%	3330
JUN 85	3315	2967	3469	2514	3812	2931	101%	3340
OCT 84 TO JUN 85	28831	25803	29167	21861	35182	27053	95%	3290 (AVG)


NAVY RECRUITERS
-TRENDS AND PROJECTIONS-
RECRUITERS
4000
3800
3600
3400
3200
3000
2800
2600
2400
2200
2000
O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
MONTH
FY1983
FY1984
FY1985


FORECASTS OF NAVY ENLISTMENT CONTRACTS
NPS 1-3A MALE HSDG's
LEGEND
CONTRACTS
FORECAST
UPPER 90
LOWER 90
GOALS
NET CONTRACTS / NET GOALS
7000
6000
5000
4000
3000
2000
1000
0
ONDJFMAMJJASONDJFMAMJJASONDJFMAMJ
MONTH
FY1983
FY1984
FY1985
FORECASTS BEGIN OCTOBER, 1984


NAVY NET GOALS VS NET CONTRACTS
NPS MALE 1–3A HSDG's
OCT–JUNE TIME INTERVALS
LEGEND
GOALS
CONTRACTS
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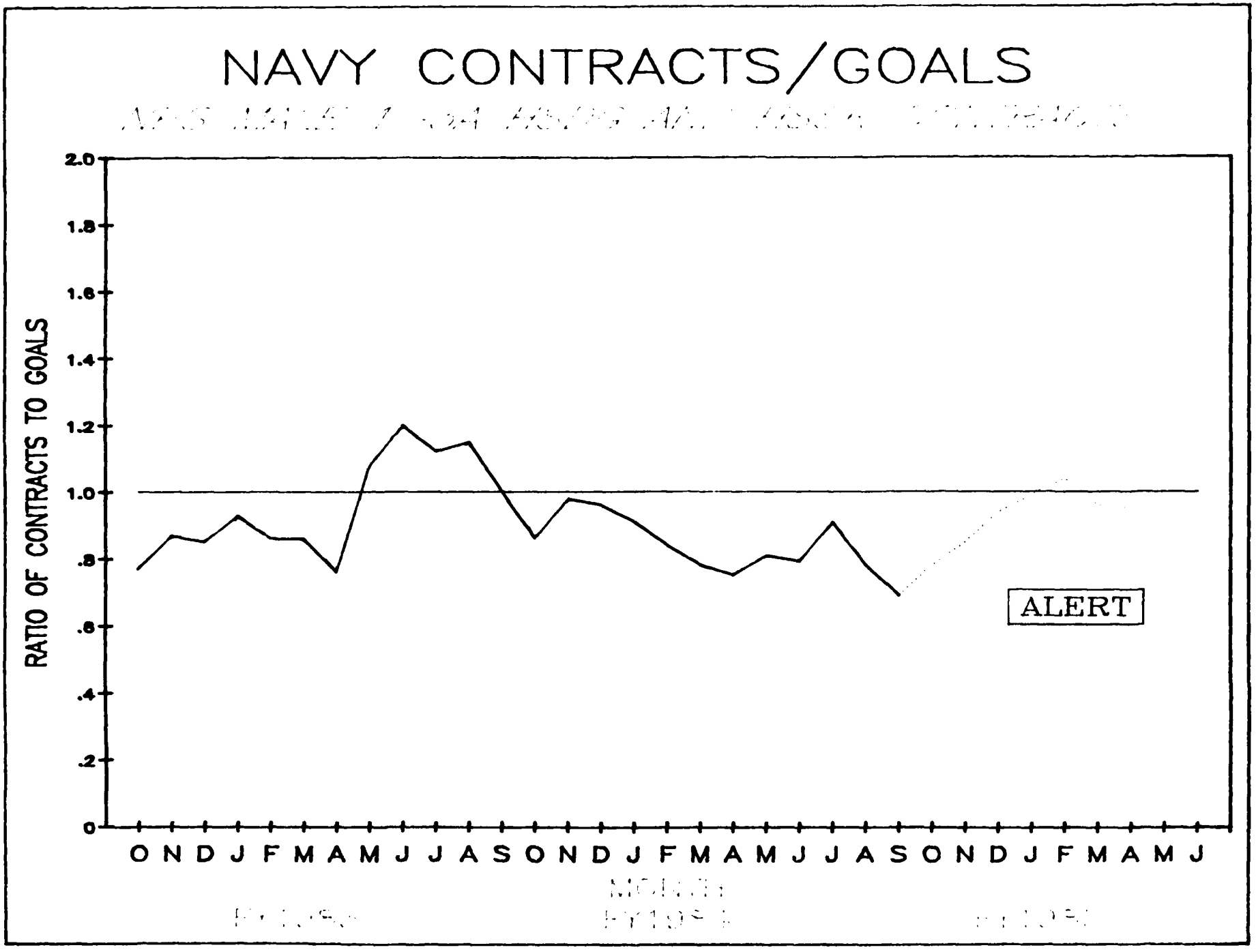
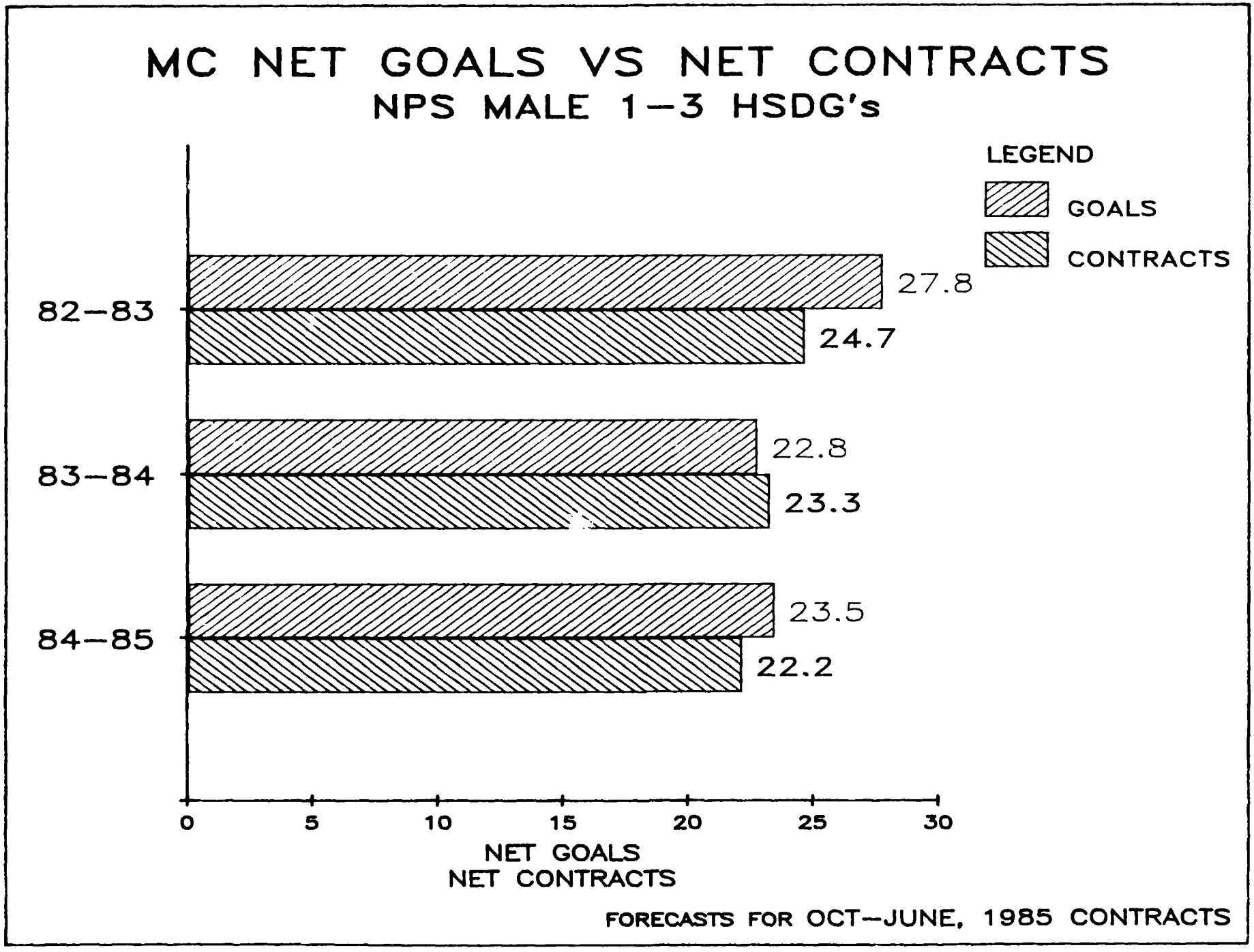
36.7
32.7
83–84
34.2
29.2
84–85
27.1
25.8
0
5
10
15
20
25
30
35
40
NET GOALS
NET CONTRACTS
FORECASTS FOR OCT–JUNE, 1985 CONTRACTS

NAVY CONTRACTS/GOALS



SECTION II: NAVY RECRUITING OUTLOOK


MC NET GOALS VS NET CONTRACTS
NPS MALE 1–3 HSDG's
LEGEND
GOALS
CONTRACTS
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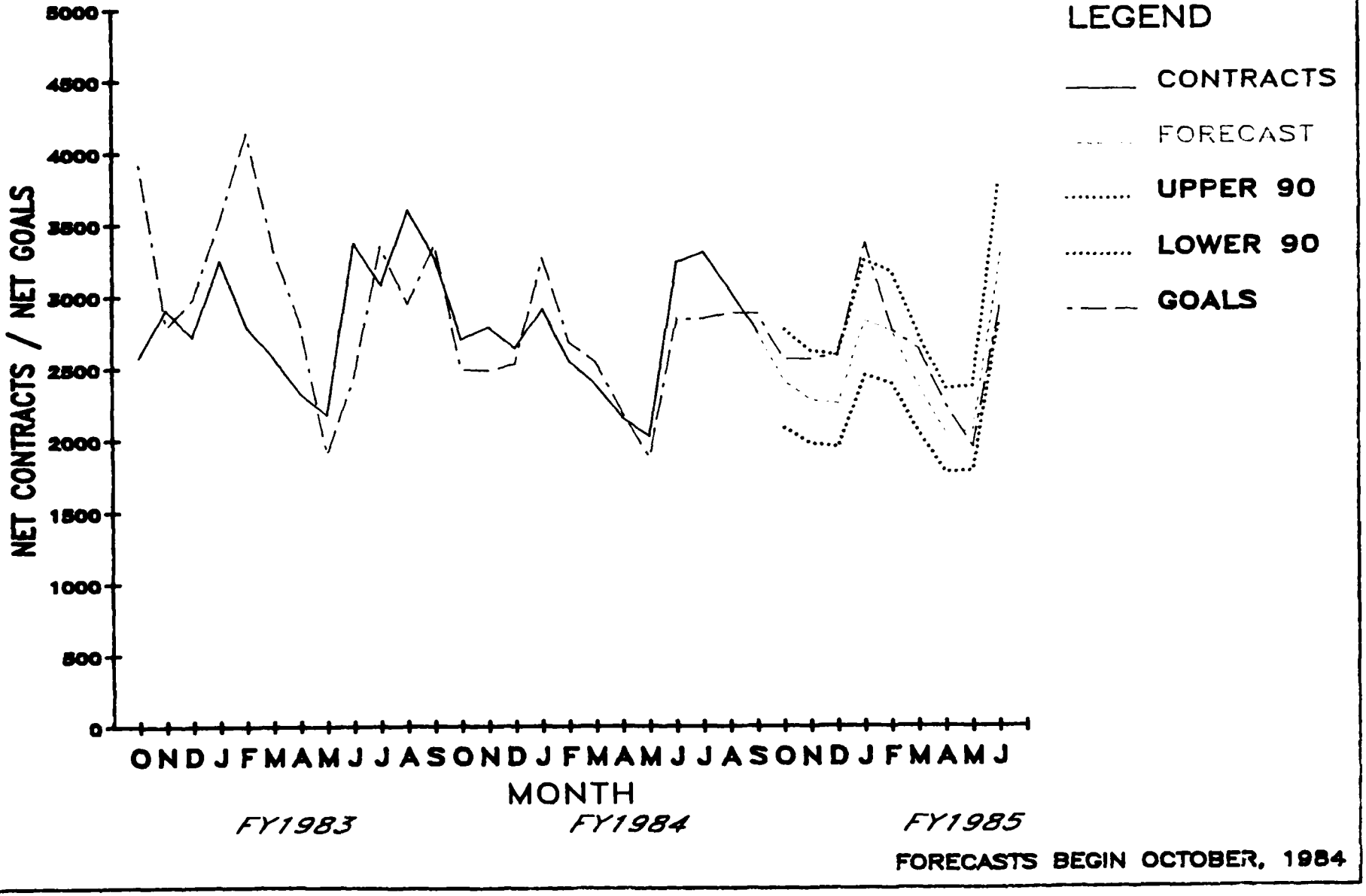
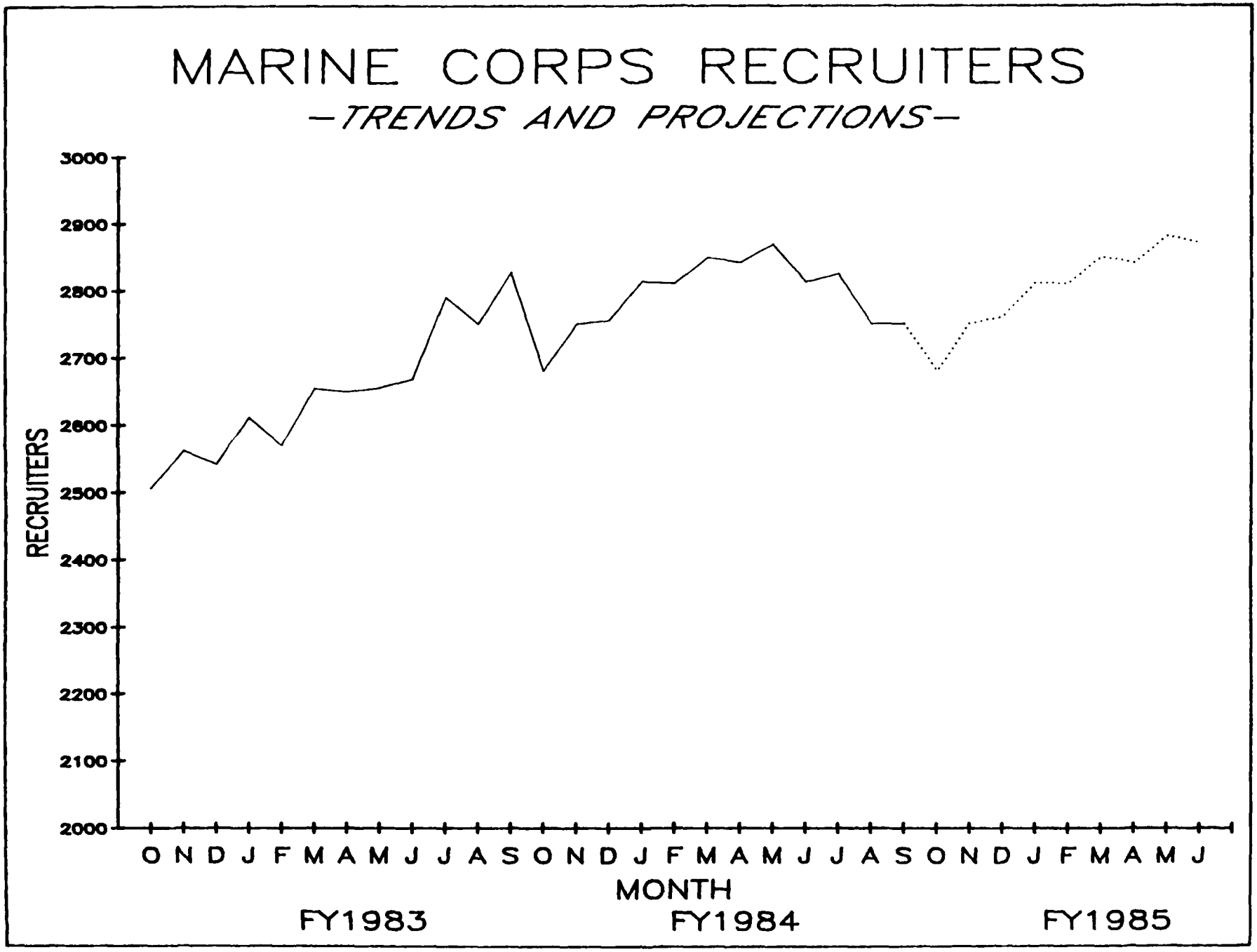
27.8
24.7
83–84
22.8
23.3
84–85
23.5
22.2
0
5
10
15
20
25
30
NET GOALS
NET CONTRACTS
FORECASTS FOR OCT–JUNE, 1985 CONTRACTS

FORECASTS OF M.C. ENLISTMENT CONTRACTS

NPS 1–3 MALE HSDG's




MARINE CORPS RECRUITERS
-TRENDS AND PROJECTIONS-
RECRUITERS
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
MONTH
FY1983
FY1984
FY1985

MARINE CORPS RECRUITING OUTLOOK
NPS MALE 1-3 HSDG AND HSSR CONTRACTS

-TWENTY-FOUR MONTH HISTORICAL TRENDS-

DATE	GROSS CONTRACTS	NET CONTRACTS	MC GOALS	1-3 GOALS	CONTRACTS / GOALS	RECRUITERS
OCT 82	2802	2575	4257	3916	66%	2506
NOV 82	3168	2911	3021	2779	105%	2562
DEC 82	2958	2718	3239	2980	91%	2541
JAN 83	3537	3251	3837	3530	92%	2611
FEB 83	3039	2793	4491	4132	68%	2568
MAR 83	2804	2577	3613	3324	78%	2654
APR 83	2530	2325	3054	2810	83%	2648
MAY 83	2368	2176	2061	1896	115%	2655
JUN 83	3671	3374	2641	2430	139%	2668
JUL 83	3345	3074	3633	3342	92%	2790
AUG 83	3915	3598	3196	2940	122%	2749
SEP 83	3547	3260	3644	3352	97%	2827
OCT 83	2933	2695	2701	2485	108%	2679
NOV 83	3031	2785	2691	2476	113%	2750
DEC 83	2864	2632	2746	2526	104%	2756
JAN 84	3164	2908	3540	3257	89%	2813
FEB 84	2768	2544	2900	2668	95%	2810
MAR 84	2586	2377	2750	2530	94%	2849
APR 84	2338	2149	2369	2179	99%	2841
MAY 84	2194	2016	2032	1869	108%	2869
JUN 84	3512	3228	3073	2827	114%	2812
JUL 84	3593	3302	3082	2835	116%	2825
AUG 84	3292	3025	3126	2876	105%	2750
SEP 84	2980	2739	3112	2863	96%	2750

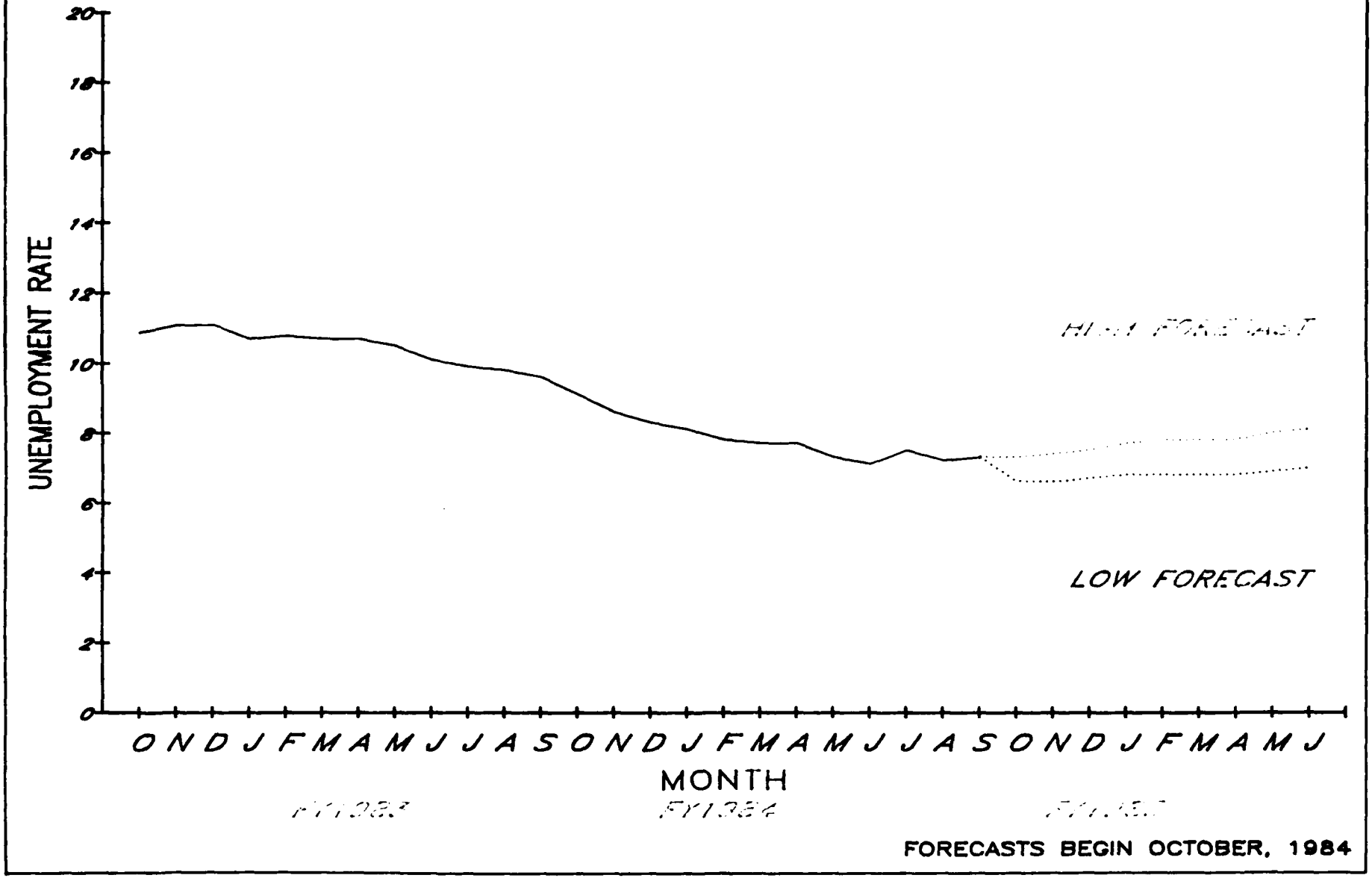
-NINE MONTH FORECAST PERIOD-

DATE	GROSS CONTRACTS	FORECASTS OF NET CONTRACTS MEAN	UPPER 90	LOWER 90	MC GOALS	1-3 GOALS	CONTRACTS / GOALS	RCTRS
OCT 84	2607	2396	2750	2072	2770	2548	94%	2680
NOV 84	2467	2267	2602	1961	2770	2548	89%	2750
DEC 84	2438	2241	2571	1938	2806	2582	87%	2760
JAN 85	3063	2815	3230	2434	3648	3356	84%	2810
FEB 85	2985	2743	3148	2373	2981	2743	100%	2810
MAR 85	2561	2354	2701	2036	2841	2614	90%	2850
APR 85	2217	2037	2338	1763	2420	2226	92%	2840
MAY 85	2233	2052	2355	1776	2104	1936	106%	2880
JUN 85	3561	3273	3756	2831	3156	2904	113%	2870
OCT 84 TO JUN 85	24133	22178	25451	19184	25496	23457	95%	2810 (AVG)

SECTION V: UNEMPLOYMENT FORECASTS

REWS FORECASTS OF UNEMPLOYMENT

CIVILIAN MALE WORKERS



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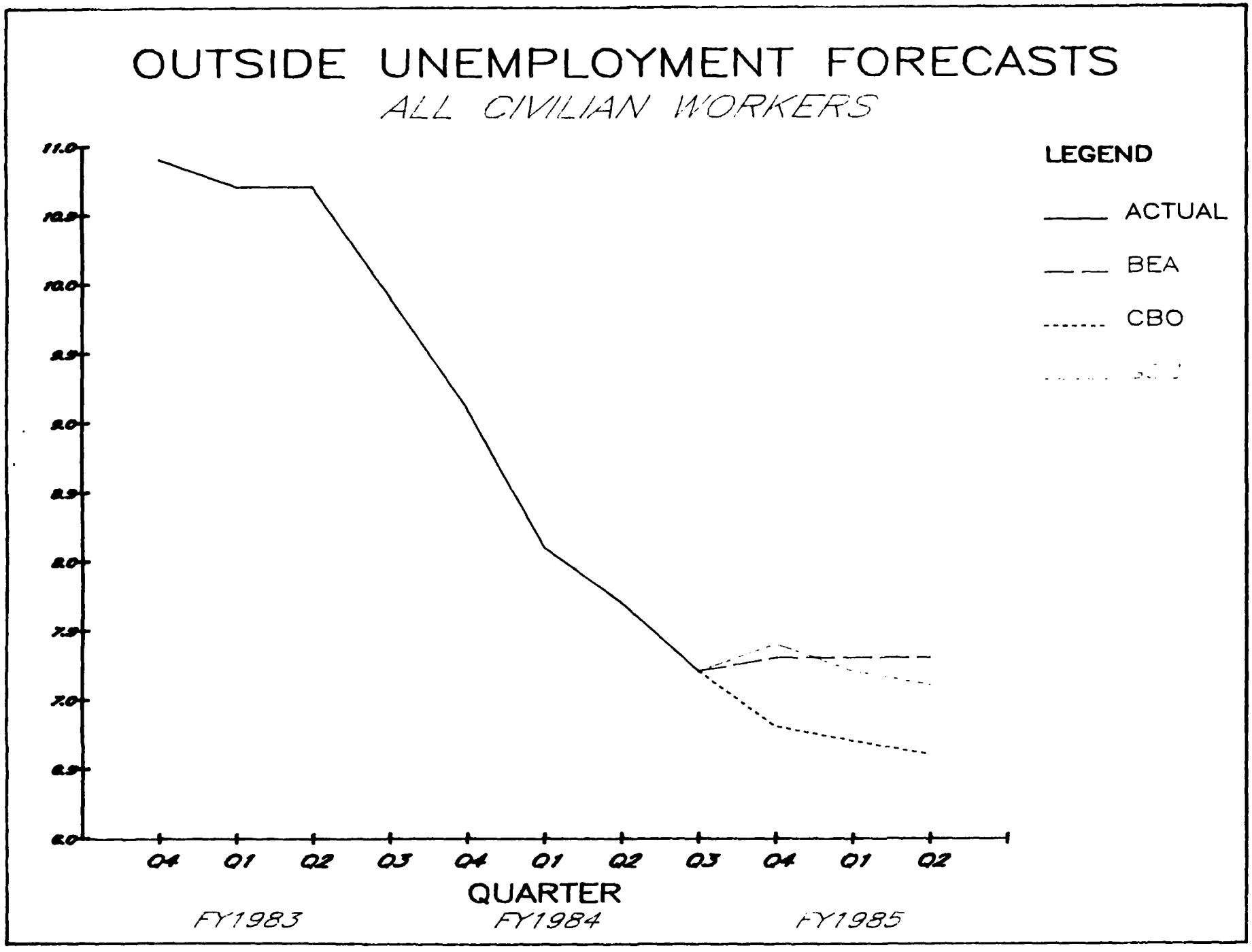

OUTSIDE UNEMPLOYMENT FORECASTS
ALL CIVILIAN WORKERS
LEGEND
ACTUAL
BEA
CBO
11.0
10.0
9.0
8.0
7.0
6.0
Q4
Q1
Q2
Q3
Q4
Q1
Q2
Q3
Q4
Q1
Q2
QUARTER
FY1983
FY1984
FY1985

REWS FORECASTS OF UNEMPLOYMENT — MOST AND LEAST OPTIMISTIC
With Confidence Intervals at 95%

MONTH	ACTUAL
8210	10.9
8211	11.1
8212	11.1
8301	10.7
8302	10.8
8303	10.7
8304	10.7
8305	10.5
8306	10.1
8307	9.9
8308	9.8
8309	9.6
8310	9.1
8311	8.6
8312	8.3
8401	8.1
8402	7.8
8403	7.7
8404	7.7
8405	7.3
8406	7.1
8407	7.5
8408	7.2
8409	7.3

	REWS HIGH	UPPER 95	LOWER 95	REWS LOW	UPPER 95	LOWER 95
8410	7.3	7.8	6.9	6.6	7.8	5.5
8411	7.4	8.1	6.7	6.6	8.0	5.2
8412	7.5	8.4	6.6	6.7	8.3	5.0
8501	7.7	8.8	6.5	6.8	8.6	4.9
8502	7.8	9.1	6.4	6.8	8.9	4.7
8503	7.8	9.4	6.2	6.8	9.1	4.5
8504	7.8	9.6	5.9	6.8	9.3	4.2
8505	8.0	10.0	5.9	6.9	9.6	4.2
8506	8.1	10.4	5.9	7.0	10.0	4.1

FORECASTS OF UNEMPLOYMENT
REWS COMPARED WITH OUTSIDE SOURCES

For October 1984 - June 1985

MONTH	REWS HIGH (males 16+)	CBO	BEA (All civilians)	GSU
October 1984	7.3		7.3	7.4
November	7.4	6.8	7.3	7.4
December	7.5		7.3	7.3
January 1985	7.7		7.3	7.3
February	7.8	6.7	7.3	7.2
March	7.8		7.3	7.2
April	7.8		7.3	7.1
May	8.0	6.6	7.3	7.0
June	8.1		7.3	7.0

QUARTERLY TRENDS IN UNEMPLOYMENT FORECASTS - FY83-FY85

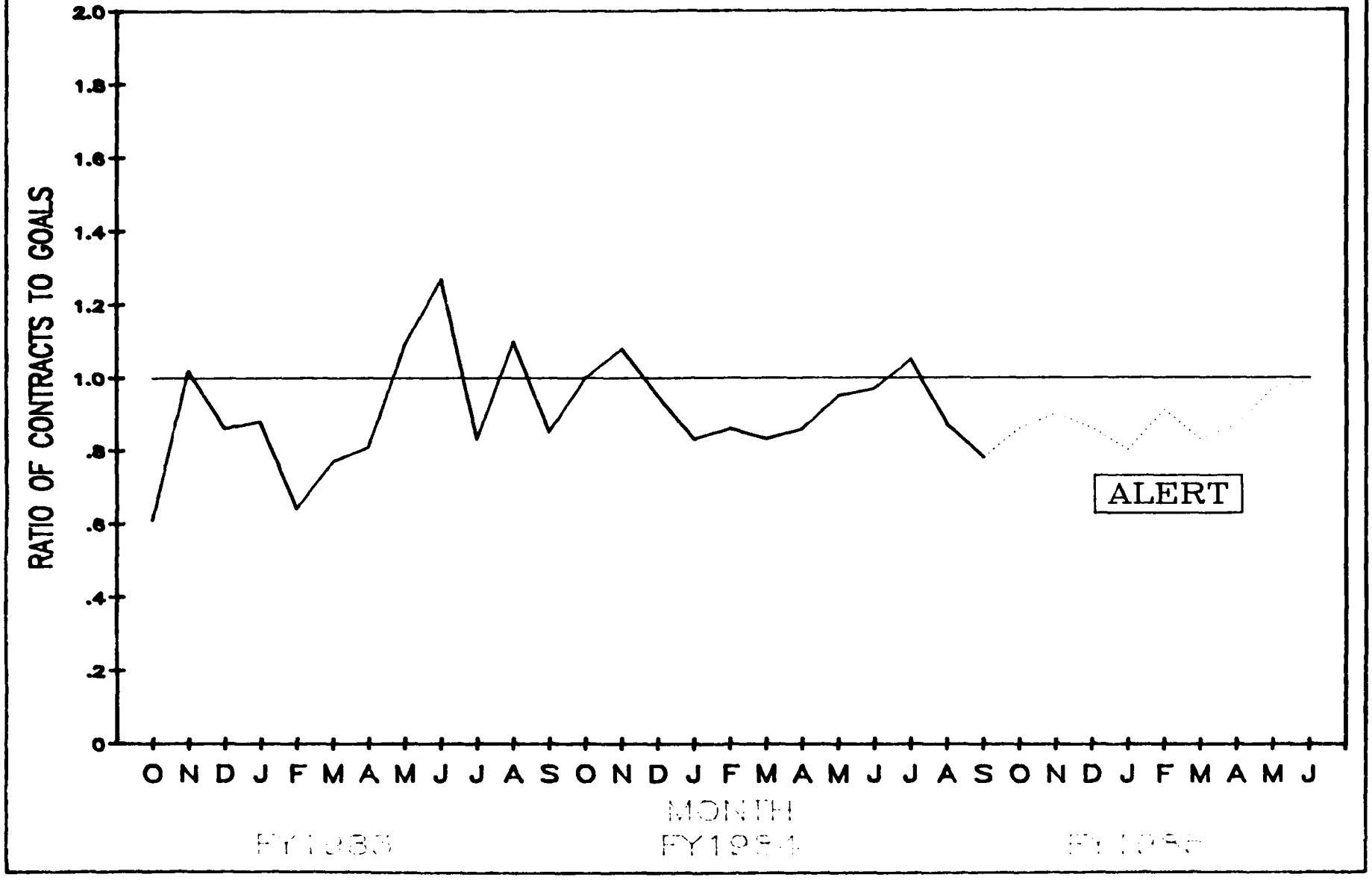
QUARTER	ACTUALS	REWS HIGH (males 16+)	CBO	BEA (All civilians)	GSU
FY83 I	10.9				
FY83 II	10.7				
FY83 III	10.7				
FY83 IV	9.9				
FY84 I	9.1				
FY84 II	8.1				
FY84 III	7.7				
FY84 IV	7.2				
FY85 I		7.4	6.8	7.3	7.4
FY85 II		7.8	6.7	7.3	7.2
FY85 III		8.0	6.6	7.3	7.0

APPENDIX

MARINE CORPS RECRUITING OUTLOOK ADDITIONAL COHORT: 1-4A

MARINE CORPS CONTRACTS/GOALS

NPS MALES 1-92A HSDG AND HSGA CONTRACTS



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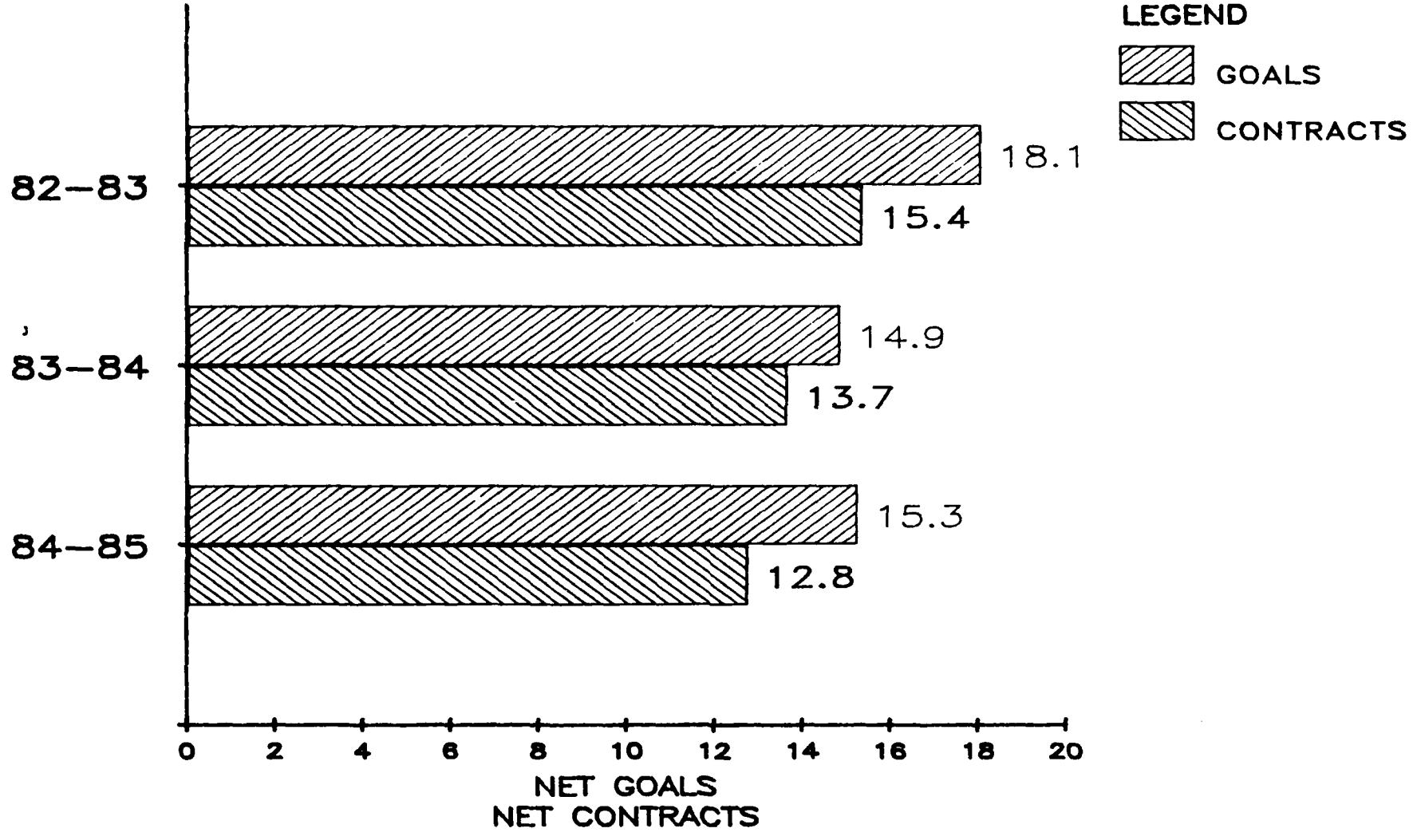
MC NET GOALS VS NET CONTRACTS

NPS MALE 1–3A HSDG AND HSSR's

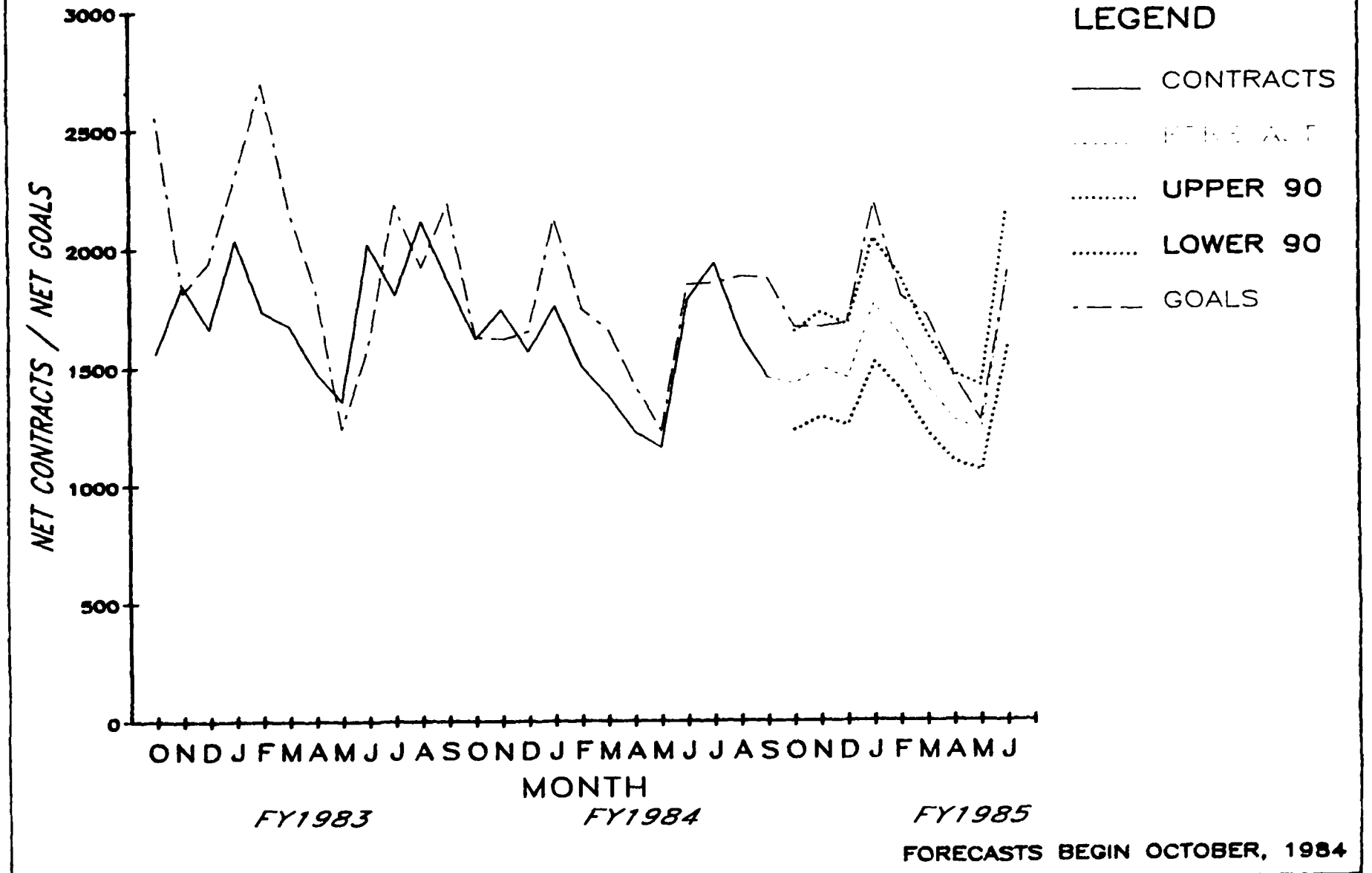
OCTOBER TO JUNE TIME INTERVALS



FORECASTS FOR OCT–JUNE, 1985 CONTRACTS

FORECASTS OF M.C. ENLISTMENT CONTRACTS

NPS 1-3A MALE HSDG's



MARINE CORPS RECRUITING OUTLOOK
NPS MALE 1-3A HSDG AND HSSR CONTRACTS

-TWENTY-FOUR MONTH HISTORICAL TRENDS-

DATE	GROSS CONTRACTS	NET CONTRACTS	MC GOALS	1-3A GOALS	CONTRACTS / GOALS	RECRUITERS
OCT 82	1711	1564	4257	2554	61%	2506
NOV 82	2021	1847	3021	1813	102%	2562
DEC 82	1821	1664	3239	1943	86%	2541
JAN 83	2226	2035	3837	2302	88%	2611
FEB 83	1896	1733	4491	2695	64%	2568
MAR 83	1833	1675	3613	2168	77%	2654
APR 83	1622	1483	3054	1832	81%	2648
MAY 83	1480	1353	2061	1237	109%	2655
JUN 83	2209	2019	2641	1585	127%	2668
JUL 83	1973	1803	3633	2180	83%	2790
AUG 83	2314	2115	3196	1918	110%	2749
SEP 83	2035	1860	3644	2186	85%	2827
OCT 83	1770	1618	2701	1621	100%	2679
NOV 83	1906	1742	2691	1615	108%	2750
DEC 83	1711	1564	2746	1648	95%	2756
JAN 84	1922	1757	3540	2124	83%	2813
FEB 84	1640	1499	2900	1740	86%	2810
MAR 84	1505	1376	2750	1650	83%	2849
APR 84	1338	1223	2369	1421	86%	2841
MAY 84	1262	1153	2032	1219	95%	2869
JUN 84	1952	1784	3073	1844	97%	2812
JUL 84	2118	1936	3082	1849	105%	2825
AUG 84	1780	1627	3126	1876	87%	2750
SEP 84	1587	1451	3112	1867	78%	2750

-NINE MONTH FORECAST PERIOD-

DATE	GROSS CONTRACTS	FORECASTS MEAN	OF NET UPPER 90	CONTRACTS LOWER 90	MC GOALS	1-3A GOALS	CONTRACTS / GOALS	RCTRS
OCT 84	1559	1425	1644	1226	2770	1662	86%	2680
NOV 84	1633	1493	1722	1283	2770	1662	90%	2750
DEC 84	1585	1449	1671	1245	2806	1684	86%	2760
JAN 85	1926	1760	2031	1514	3648	2189	80%	2810
FEB 85	1775	1622	1872	1395	2981	1789	91%	2810
MAR 85	1541	1408	1625	1211	2841	1705	83%	2850
APR 85	1386	1267	1461	1089	2420	1452	87%	2840
MAY 85	1339	1224	1412	1053	2104	1262	97%	2880
JUN 85	2041	1865	2152	1603	3156	1894	99%	2870
OCT 84 TO JUN 85	14785	13513	15590	11619	25496	15299	88%	2810 (AVG)

CHAPTER III

DEVELOPMENT OF THE ACPP

The goal of the REWS/ACPP is to provide means for reducing lags in the recognition of ensuing enlistment shortfalls and delays in the application of resources to prevent those shortfalls. In Phase I, the study team investigated the problems of inter-level communications and budgetary allocation procedures which contribute to these lags and delays. From the Phase I work emerged a group of concepts, comprising The Accession Contingency Planning Process, which address resolution of these problems.

The study team identified five potential actions which could reduce the time required for the various management levels to recognize changing recruiting conditions and adjust the resources needed to respond to these changes. The ACPP should: 1) provide for regular Secretarial Performance Reviews, 2) modify the PPBS Authorization process, 3) improve inter-level communications, 4) develop an Offline Adjustment Process (OAP), and 5) develop an Immediate Contingency Allocation Authority (ICAA).

By the close of Phase I the five concepts had been defined and briefed throughout the Services and various government agencies. These briefings raised considerable interest, but also many questions and concerns. Therefore ACPP work in Part 1 of Phase II was devoted to reviewing the concepts, continuing briefings to those agencies potentially involved, and incorporating the responses to these briefings into revisions of the concepts.

In close collaboration with the COTR and Accession Policy personnel, the study team narrowed the focus of the ACPP, and chose two concepts for further development: the OAP and ICAA. It was decided that these hold the most promise for implementation. The OAP and ICAA designs could be incorporated into the system through modifications to the PPBS process and together with the Recruitment Early Warning System would greatly improve inter-level communications.

With the focus of the ACPP narrowed, work began on refining and developing the OAP and ICAA concepts. As Phase II Part 1 closed, a working draft of language for defense guidance and POM development was being prepared. This work will be developed later in Phase II.

In addition to concept refinement during Phase II, Part 1, ACPP researchers provided support to the COTR and staff in briefing the Services on the potential of the ACPP. Also, final revisions incorporating responses from the Services were completed and submitted for the Phase I final report, and a new work plan was specified for the remainder of Phase II.

CHAPTER IV

DEVELOPMENT OF AN INTERIM AUTOMATED REWS

Phase I of the REWS/ACPP study produced a conceptual design and general user requirements for an automated REWS. However, many details were impossible to ascertain because system users had not been finally determined, a site for implementation of the automated system was not chosen, and, in the absence of this information, hardware could not be selected. Therefore, the task of further identification of system requirements was assigned to Phase II, Part 1 of the study, as well as the development of an interim batch processing system which could produce the monthly Recruitment Market Assessment Reports while a more sophisticated interactive REWS is being developed later in Phase II.

In undertaking these tasks, the study team quickly discovered that recent developments in microcomputer hardware and associated software offer attractive alternatives to the original design concepts involving automation on a mainframe. The desirability of microcomputer implementation was enhanced by the recent acquisition of an IBM PC XT in OSD's Office of Accession Policy. Further investigation of PC and software capapbilities prompted our recommendation that the interim batch system be installed on such equipment. The sponsor agreed, and the current REWS batch processing system was installed and is operating on an IBM PC XT, located at ERL and identical to Accession Policy hardware.

The batch system uses output from statistical models, estimated at the Boeing Computer Center, to make various graphical and tabular presentations. As historical data series were collected from a variety of sources throughout the study, they were used to construct an appropriate database in SAS (trademark for Statistical Analysis System) datasets at Boeing. The database is updated monthly with current values. Before forecasting enlistments, we forecast unemployment rates using a SAS ARIMA procedure specified through a series of forecasting tests. This procedure produces parameter estimates,

diagnostic statistics, and unemployment forecasts with confidence intervals. These unemployment forecasts are incorporated in the enlistment forecasting models. Using the SAS Autoreg procedure, enlistment forecast series for each Service are produced by estimating the forecasting models monthly. The Autoreg procedure estimates parameters and adjusts for serial correlation. Our SAS program includes a macro that generates forecasts, actuals, errors, and confidence bands in logs and levels.

The SAS output is captured in ASCII files and transferred to the ERL IBM PC XT, via modem, where it undergoes numerous conversions by software packages. Using RBase: 4000, we convert the ASCII files to DIF files which can be read into Lotus or Symphony spreadsheets. The data are edited there, and then output as tables or as DIF files to Chartmaster. The Chartmaster procedures facilitate production of graphic presentations of historical and projected values of variables affecting enlistment, forecasts of enlistment supply, and comparisons of forecasts to goals.

The capabilities of the current interim system are demonstrated in the October 1984 Recruiting Market Assessment Report, presented in Chapter II. The graphs and tables in this report are representative of what can be produced, but many variations are possible and will be explored further. The next phase in development of the system will be the transfer of the database from Boeing to the PC at ERL, where, in place of SAS statistical procedures, we will test the capability of the RATS (Regression Anlysis of Time Series) software package to estimate the models. As time and funding permit, the study could eventually produce an interactive system which could respond to a variety of user needs for REWS information.

CONCLUSIONS

The completion of tasks for this part of the REWS/ACPP study has produced significant progress toward the realization of our overall study objectives. Data collection efforts in this period have updated most of the variables in the forecasting models, and have added several new policy variables to models for the Navy, Air Force, and Marine Corps. Other data series collected, or requested and expected momentarily, will be used for further model development later in the study. For the Marine Corps a model was estimated for the 1-3A cohort, in addition to the model for 1-3s.

The expansion of Phase I forecasting models has enhanced our ability to track the recruiting market. A monthly monitoring procedure has been followed since August, and promising headway has been made towards the development of a useful monthly report. The report is currently being produced by a microcomputer at ERL facilities, using outputs from SAS produced at Boeing Computer Services. This interim batch system is operating appropriately as a precursor to the fully automated REWS we envision by the end of the study. The ACPP concepts were sharpened and focused during this period, and the OAP and ICAA were identified as the most useful actions to pursue for implementation.

In Part 2 of Phase II we will utilize and build on the progress of Part 1, as well as pursue some new areas of research and development. We will continue to process the data we have collected, merge it into the REWS database, and construct additional variables. We will examine alternative specification and estimation methods in a continuing model development effort, and additional models will be constructed so that we can produce forecasts for the 1-3 and 1-3A cohorts for each Service. Work will begin on a leading indicator model for unemployment. The REWS monthly reports will be refined, and we will test the feasibility of producing forecasts directly on the IBM PC XT. If this procedure proves successful, we will install the entire system on the microcomputer. The ACPP concepts chosen in Part 1 for further development will be briefed and refined with key decision makers throughout the government.

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